The Journal of Facts
1829

THE JOURNAL OF FACTS.

JANUARY, 1829.

The Journal of Facts, as its name imports, is intended to form a record of the most valuable additions to the knowledge of the age. The materials for this new department of the London Magazine will be diligently sought for in such of our own periodical works as are devoted to matters of science and art, to natural history, to rural and domestic economy. In selecting any *new* fact from these very useful and important works, the greater number of which are conducted in a manner highly creditable to our country, we shall uniformly give our authorities; so that the reader who is anxious to follow up the enquiries to which any scattered paragraph may lead, may be conducted, without difficulty, to publications which *systematically* treat of matters which we have selected principally because they appear of *conversational* interest. In *foreign* works, we have most voluminous collections, from which we may gather whatever appears to us most striking and popular. The various journals of Germany, France, and Italy, offer a mine but little explored by those who cater for the public of this country. It is quite remarkable how indefatigably the writers and compilers of other nations labour to collect a great body of facts in every department of knowledge—many, indeed, very worthless and perishable, but others of a highly important and enlivening character. The *Bulletin Universel* of France, a monthly publication, averaging 700 or 800 octavo pages, is a most valuable storehouse of every new fact that is called into light by the communication of mind throughout the world. When an authority is not given, the information is derived from our own sources.

The merit to which we shall aspire in this department, which we hope to render as interesting as it will be useful, will be the humble one of judicious selection. The subjects will be such as will instruct and amuse the general reader; for it must be obvious that the scientific student, in any branch of knowledge, can only look at this record as an index-hand, pointing to the sources from which we derive our desultory information. It has been found necessary to classify the subjects of which the Journal of Facts is composed. The following division appears to us the most advantageous—

§ 1. Natural Philosophy.
§ 2. Natural History.
§ 3. Medical Science.
§ 4. Agriculture and Rural Economy.
§ 5. Horticulture.
§ 6. Domestic Economy.
§ 7. Mechanical and Useful Arts.
§ 8. Fine Arts.
§ 9. Antiquities.
§ 10. General Literature and Education.
§ 11. Naval and Military Economy.
§ 12. Geography, Statistics, and Public Economy.

We have only to observe, in conclusion, that the first number of a work which will be compiled from very scattered materials, must be necessarily very imperfect; and to add that, as our arrangements become more mature (particularly in the establishment of Original Correspondents), we shall be able to produce greater novelty and variety.

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§ I. Natural Philosophy.

Encke's Comet.—The comet, denominated Encke's comet, which is now engrossing the public mind generally, and the scientific world in particular, has justly claimed and received the careful attention of astronomers, since its appearance in 1818 engaged Professor Encke to consider the elements of its orbit. He was enabled to identify it with a comet described by Messrs. Mechain and Messier in 1786, in the constellation Aquarius; also with a comet discovered in 1795 by Miss Herschel in the constellation Cygnus: and with the comet in 1805. The investigation of the diligent professor enabled him to foretel its re-appearance in 1822, and to state the probability of its not being observable in our climate. This anticipation was realized by the fortunate circumstance of the attachment of Sir Thomas Brisbane to astronomical pursuits, who was then governor of New South Wales, and had fitted up an observatory there, and provided himself with the able assistance of Mr. Rumker. The latter gentleman appears to have discovered the phenomenon on June 2, 1822; and his accurate observations afforded Encke the means of reconsidering the true elements of the comet's orbit, and with additional confidence to compute its return for 1825. This occurred as was expected; the fresh data afforded by that return were carefully collated by the professor to enable him still more satisfactorily to define the orbit, and with increased confidence to predict its return this year. It was first observed by Mr. South on October 30, 1828. This comet affords particular interest to the mind of the astronomer, though it does not offer a splendid object to his eye. Its orbit is an ellipsis of comparatively small dimensions, wholly within the orbit of Jupiter; its period is about three years and three-tenths,—a much shorter period than has hitherto appeared due to any other comet, with the exception of one seen in 1770, which did not satisfy, as far as observation has been able to show, the prediction of the period of five years and a half which was attributed to it. In the opinion of Encke and other astronomers, the comet which is now visible may afford an opportunity of proving that the heavens oppose a resisting medium to the motion of bodies. This subject has been discussed in the Transactions of the Astronomical Society of London, by the able mathematician Masotti; and that gentleman offers strong reasons for considering comets capable of affording a demonstration of a resisting medium in the heavens, though planets may give no indication of it. Another comet which encourages the anticipation of much astronomical gratification, is one which Biela discovered February 27, 1826, and which was afterwards seen by Gambart and others. It seems to possess similar claims to the attention of astronomers as that of Encke, it being conceived to revolve about the sun in about six years seven-tenths, and to be the same as the comet which appeared in 1772 and that which appeared in 1806. Encke's comet will be in its perihelion, by computation, on 10th January, 1829.—*Companion to the Almanac.*

Comet of 1811.—According to the recent calculations of the Professor Lamberti, of the University of Dorpat, the comet so long visible in the year 1811 was 57¾ times smaller than the sun, but 17 times bigger than Jupiter, 25,104 times bigger than our globe, 1,255,000 times bigger than the moon, while its orbit exceeds that of all the planets of our solar system put together.—*Leipziger Literatur Zeitung.*

Affection of the Magnetic Needle during Earthquakes.—On the 23d of February, 1828, in the coal-mine of Wiesh, near Muhlheim on the Ruhr,

at 155 feet below the level of the sea, 410 feet from the surface of the soil, and at the distance of 1,400 feet from the entrance shaft, the engineer *Zobel* being engaged in making an admeasurement with the compass, the needle became so violently agitated that it was impossible to use it in measuring angles. The extent of the oscillations from north to south amounted to 180°, in some of them the needle dipped. This state of the needle continued from fifteen to twenty minutes.

It afterwards appeared that an earthquake had been felt on the surface at the same moment that the needle had been thus affected. It is also singular that this earthquake had not been felt in a single one of the many mines which extend from Muhlheim eastward to the vicinity of Unna, by any of the two thousand five hundred miners at work in them, while the shock was strong at Essen, less violent at Bochum, and very feeble at Bortmund, where two shocks in the direction from west to east had been felt.—*Antologia di Firenze.*

Composition of Hail Stones.—On analysing small stones inclosed in hail which fell in the circle of Sterlitamak, in the government of Orenburg, in 1825, they were found to contain in a hundred parts, of red oxide of iron 70.00, of oxide of manganese 7.50, magnesia 6.25, alum 3.75, flint 7.50, sulphur and waste 5.00.—*Bulletin Universel.*

The Winds.—It may be stated as a rule without exception, that the west winds are more frequent than the east. But the west winds diminish more and more in proportion as the centre of the continent is approached: they are more frequent in England, Holland, and France, than in Denmark, and in the greatest part of Germany: they are of more frequent occurrence in the last mentioned countries than in Sweden and Russia. In London, the east winds (N.E., E., S.E.) are to the west winds (N.W., W., S.W.) as 1 is to 1.7; at Amsterdam, as 1 to 1.6; at *Sœndmoer* as 1 to 1.6; at Copenhagen as 1 to 1.5, at Stockholm as 1 to 1.4; at Saint Petersburg as 1 to 1.3.

The west winds blow from the direction of the south point in proportion as the Atlantic sea is approached: towards the middle of the continent they blow more nearly from the direct west quarter, or from N.W. The north winds appear to increase as we go eastward. Among the winds which blow from the west, that of the S.W. quarter is most prevalent in England, Holland, and France: the direct west predominates in Denmark, and in the greater part of Germany; at Moscow the N.W. is most prevalent; at St. Petersburg and Stockholm, the north wind is much more frequent than in the more western parts of Europe.

In the western and central parts of the north of Europe, such as England, France, Denmark, Germany, Norway, the west winds are much more frequent during the summer than during the winter and spring. This does not appear to be the case in Sweden or Russia. During winter, the point from which the western winds blow inclines to the south; they are more direct and more northern in the summer. This rule, however, does not appear to extend to the eastern parts of Europe.—*Bull. Univ.*

Scientific Voyage.—Letters have been received from Captain Henry Foster, commanding his majesty's brig Chanticleer, dated Monte Video, September 22, up to which time all the scientific objects of the voyage had proceeded very satisfactorily. The meridian distances had been determined between Falmouth and Funchal, Teneriffe, St. Antonio, St. Paul's Rock near the equator, the island of Fernando Noronha, and between the latter and Cape Frio, Rio de Janeiro, St. Catherine's, and Monte Video, at which latter place a satisfactory series of pendulum experiments was completed, notwithstanding an interruption in the midst of them from a false alarm in the garrison or fort, who were in hourly expectation of an attack from the

Buenos Ayreans. The Chanticleer expected to sail about the beginning of October towards the south, in the further prosecution of the objects of the voyage.—*Hampshire Telegraph.*

§ 2. Natural History.

The Aërial Spider.—The cobwebs which are found occasionally floating in the air, alighting on the face and person as we walk, in threads of finest texture, and which are observable more especially in dewy mornings, at certain seasons, overspreading the fields with a tissue charged with pearly globules sparkling in the sun's rays, are the work of vast numbers of aërial spiders, which descending during the night to imbibe the moisture, weave among the blades of grass the webs which collect the dew. The cause of the rising of this insect and its web into the air, since its specific gravity considerably exceeds that of the atmosphere, has been variously explained. Mr. Blackwall, in an address to the Linnean Society, professes to account for the ascent of the threads by ascribing it to the effect of warm currents of air emanating from the surface of the ground. Mr. John Murray combats this doctrine, and accounts for the phenomenon in these floating webs on electrical principles. The following is the substance of his observations on this interesting insect, in the "Magazine of Natural History," of November last. During the day these aërial spiders, *according to the electrical state of the atmosphere,* either rise in a vertical direction, (and that rapidly or slowly, as they are affected by the same electrical circumstances,) or they float at angles more or less inclined to the horizon, or on a parallel with its plane. They have the power of propelling their threads in a similar variety of directions, either in motionless air, or in an atmosphere agitated by the winds; or even against the wind, the threads preserving invariably the direction in which they are propelled, and never intermingling; and sometimes a pencil of threads, presenting the appearance of a divergent brush, is propelled. On comparing these operations of the insect with the electrical state of the atmosphere, the following corresponding results are observable:—when the air is in a positive state, as in clear and fine weather, the spider makes his ascent most easily and rapidly: when it is weakly positive, he rises with difficulty, to a limited altitude, and with but slight inclination of the propelled threads above the plane of the horizon; while when the negative electricity prevails, as in cloudy weather or on the approach of rain, he is altogether unable to ascend; so also as towards evening the positive electricity of the air becomes feeble, and during the night changes to negative, then the spiders descend to the earth. With regard to the habits of this little aëronaut in other respects, Mr. Murray says, he is greedy of moisture, though otherwise abstemious; its food is perhaps peculiar, and only found in the superior regions of the sky; like the rest of its tribe, it is doubtless carnivorous, and may subserve some highly important purpose in the economy of Providence; such, for instance, as the destruction of that truly formidable, though almost microscopically minute insect, the Furia infernalis, whose wound is stated to be mortal. Its existence has been indeed questioned, but by no means disproved; that, and some others, injurious to man, or to the inferior creation, may be its destined prey, and thus our little aëronaut, unheeded by the common eye, may subserve an important good.—*Mag. of Nat. Hist.*

Vegetable Origin of Silk.—The parenchyma of the white mulberry is composed of a tissue of beautiful white fibres of silk, much resembling China silk, which would lead us to the inference that silk is a vegetable, not an animal product, that is to say, that the basis of the material, in its proximate form, is derived from the vegetable kingdom, though the spinning of its substance into a lengthened thread is entirely due to the mechanical

functions of the silkworm. The silk tissue of the mulberry becomes very obvious by breaking some decayed twigs of two or three years' growth.—*Gard. Mag.*

Prognostics of the Weather.—"Red clouds in the west, at sunset, especially when they have a tint of purple, portend fine weather. The reason of which is, that the air, when dry, refracts more red or heat-making rays; and as dry air is not perfectly transparent, they are again reflected in the horizon. A copper or yellow sunset generally foretells rain; but as an indication of wet weather approaching, nothing is more certain than the halo around the moon, which is produced by the precipitated water; and the larger the circle the nearer the clouds, and consequently the more ready to fall. The old proverb is often correct:

A rainbow in the morning is the shepherd's warning:
A rainbow at night is the shepherd's delight.

A rainbow can only occur when the clouds, containing or depositing the rain, are opposite to the sun; and in the evening the rainbow is in the east, and in the morning in the west; and as our heavy rains in this climate are usually brought by the westerly wind, a rainbow in the west indicates that the bad weather is on the road, by the wind, to us; whereas the rainbow in the east, proves that the rain in these clouds is passing from us. When the swallows fly high, fine weather is to be expected or continued; but when they fly low and close to the ground, rain is almost surely approaching. This is explained as follows: Swallows pursue the flies and gnats, and flies and gnats usually delight in warm strata of air; and as warm air is lighter, and usually moister, than cold air, when the warm strata of our air are high, there is less chance of moisture being thrown down from them by the mixture with cold air; but when the warm and moist air is close to the surface, it is almost certain that, as the cold air flows down into it, a deposition of water will take place.—*Edin. New Phil. Journ.*

Natural stocking with Fish of Ponds on Hills.—The large water-beetle, which is in the habit of feeding upon the spawn of fish, occasionally in the evening climbs up the stems of rushes, &c., out of the water, sufficiently high to enable it to take wing; in these circumstances it has been caught, and, putting it into water, has been found to give out the spawn with which it had gorged itself previous to taking flight, both in a digested and undigested state,—so that, on trial, it has been found that it produced fish of various kinds.—*Edin. New Phil. Journ.*

The Nuthatch.—The Nuthatch (Sitla Europæa) is a little ash-coloured bird rarely to be seen: it is thick in form, and heavily built, with large feet, scansorial, but not of that construction peculiar to perfect climbing birds, the toes being placed three forwards and one backwards: the beak is uncommonly large and strong for so small an animal, perfectly straight and somewhat wedge-shaped, exhibiting, when viewed laterally, much of the abrupt truncation so well adapted for breaking hard substances, to be observed in that of the woodpecker. He penetrates with facility the shells of nuts and extracts the kernel; he is most remarkable, however, for his habit of tapping, which is loud enough to be heard at a furlong distance. One of these little birds being wounded and caught, was placed in a cage by his captor, but showed a fierce temper, impatient of confinement, and soon fell a victim to his irritability. During a night and day, which his confinement lasted, his tapping labour was incessant, and after occupying his prison for that short space only, he left the wood-work pierced and worn like worm-eaten timber. His impatience at his situation was excessive, his efforts to escape were unremitted, and displayed much intelligence and cunning; he was fierce, and fearlessly familiar, and voracious of the food placed before him. At the close of the second day, he sunk under the combined effects of his vexation, assiduity,

and voracity. His hammering, says a correspondent of the 'Magazine of Natural History,' whence we have derived these particulars, "was peculiarly laborious, for he did not peck as other birds do, but grasping his hold with his immense feet, he turned upon them as upon a pivot, and struck with the whole weight of his body, thus assuming the appearance, with his entire form, of the head of a hammer, or, as I have sometimes seen birds on mechanical clocks, made to strike the hour by swinging on a wheel."—*Magazine of Natural History.*

Medicinal Qualities of the Violet.—The medicinal qualities of the violet order lie in the roots, which contain, in all the varieties, in a greater or less degree, emetic properties. One of the ipecacuanhas is the root of a Brazilian violet.—*Magazine of Natural History.*

Production of Cotton.—Cotton is furnished by the fibrous threads in which the seeds of the gossypium of the order of malvaceæ, are enveloped—These threads, when examined by the microscope, will be seen to be finely toothed, which explains the cause of their adhering together with greater facility than those of bombax and several apocyneæ, which are destitute of teeth, and which cannot be spun into thread without an admixture of cotton. —*Magazine of Natural History.*

Carrier Pigeon.—Mr. Audubon, the American correspondent of the Magazine of Natural History, says he has shot the passenger pigeon of America (columba migratoria), during his hunting excursions through the forests; and, on dissection, found its stomach full of fresh rice, which, to have resisted the digestive process, must have been swallowed not many hours preceding its death, but could not have been obtained within 800 miles of the place where it was killed.—*Magazine of Natural History.*

Singing birds of the Old and New World.—It is a very unfounded notion, that in the New World the brilliant hues of the birds take the place of the power of song. On the contrary, it would appear from Wilson's American Ornithology, that the American song birds are infinitely more numerous than those of Europe, and many of them superior to our most celebrated songsters.—*Magazine of Natural History.*

Source of Salt in Sea Water.—It has been supposed by some naturalists, that the salt in the sea has been gradually augmented by saline particles brought into it by rivers, but this cause is totally inadequate to explain the immense quantity of salt existing in the whole mass of the ocean. If the average depth of the sea be ten miles, and it contains two and a half per cent. of salt, were the water entirely evaporated, the thickness of the saline residue would exceed 1000 feet.—*Bakewell's Introduction to Geology.*

Non-existence of Human Fossils.—The remarkable fact, that no vestiges of human remains have been discovered with those of the more ancient inhabitants of the globe, is at present fully confirmed; nor have any fossil bones of monkeys been hitherto found. The vast diluvial beds of gravel and clay, and the upper strata in Asia, however, have not yet been scientifically explored, and both sacred and profane writers agree in regarding the temperate regions of that continent as the cradle of the human race.—*Magazine of Natural History.*

Igneous Origin of Granite.—The indications of the present existence of subterranean fire beneath the granite of the Alps and of Auvergne in France, and, according to Humboldt, in the Andes, would render it probable that these rocks are of igneous origin; and the near connection there appears to exist between granite and other rocks allied to volcanic rocks, tends to confirm this opinion. The granite of the Alps rises in nearly vertical beds, which have been elevated, together with the secondary strata, after the formation of

the latter; whereas in some parts of England, the granite and the slate associated with it, though rising in elevated beds like those of the Alps, are covered by horizontal secondary strata, which must have *been deposited after the elevation* of the primary beds. Hence it is to be inferred, that the granite of England is more ancient than that of the Alps.—*Bakewell's Geology.*

Fossil Remains of ancient Creations.—A great change appears to have taken place in the condition of our planet after the deposition of the coal strata; for the upper secondary strata contain principally the remains of marine animals, and it is in these strata that the bones of vertebrated animals are first distinctly observed. Among these we find the bones of the mighty monsters of an ancient creation, whose extraordinary forms are still more astonishing than their immense magnitude. Some of these animals of the saurian or lizard tribe attained the length of forty feet or more, and appear, from the structure of the teeth and the organs of motion, to have united to the voracity of the crocodile, the power of darting through the water on their prey with inconceivable rapidity. Others had necks so long, that when extended out of the water they must have resembled immense hydras.—*Bakewell's Geology.*

The Ichneumon Fly—Provision by Nature for the destruction of the Caterpillar.—There are several species of Ichneumon which make thinnings among the caterpillars of the cabbage butterfly. The process of one species is this: while the caterpillar is feeding, the ichneumon fly hovers over it, and, with its piercer, perforates the fatty part of the caterpillar's back in many places, and in each deposits an egg, by means of the two parts of the sheath uniting together, and thus forming a tube down which the egg is conveyed into the perforation made by the piercer of the fly. The caterpillar, unconscious of what will ensue, keeps feeding on, until it changes into a chrysalis; while in that torpid state, the eggs of the ichneumon are hatched, and the interior of the body of the caterpillar serves as food for the caterpillars of the ichneumon fly. When these have fed their accustomed time, and are about to change into the pupa state, they, by an instinct given them, attack the vital part of the caterpillar (a most wonderful economy in nature, that this process should be delayed until they have no more occasion for food). They then spin themselves minute cases within the body of the caterpillar; and instead of a butterfly coming forth (which, if a female, would have probably laid six hundred eggs, thus producing as many caterpillars, whose food would be the cabbage), a race of these little ichneumon flies issues forth, ready to perform the task assigned them, of keeping within due limits those fell destroyers of our vegetables.—*Gill's Technological Repository.*

Modern Falconry.—A race of Falconers have for many years existed in the village of Falconsward, near Bois-le-Duc, in Holland, whence the whole of Europe has been supplied: for want of encouragement, however, the race has become almost extinct, and the only one now living is John Pells, in the service of John Dawson Downes, Esq., of Old Gunton Hill, Suffolk.—*Sir John Sebright's Observations on Hawking.*

Hawking is still practised in Italy, but without pomp, and chiefly we believe in the capture of small birds, of which, as is well known, the consumption in that country is great. Sir John observes, that the slight falcon takes up his abode every year, from October and November until the spring, upon Westminster Abbey, and other churches in the metropolis; and that this is well known to the London pigeon-fanciers, from the great havoc they make in their flights.

When tutored, it seems they will touch no such ignoble game; as we learn from an experiment, which, according to the Brighton Gazette, was very recently made by the Duke of St. Albans, on the downs of Brighton, where his

Grace wishing to try his hawks with pigeons instead of partridges, the birds refused to act, and all the incentives and decoys resorted to, to induce them to make a prey of the pigeons, were vain.

Superior Intelligence of the Dog and Elephant.—The dog is the only animal that dreams; and he and the elephant the only animals that understand looks: the elephant is the only animal that, besides man, feels *ennui*; the dog, the only quadruped that has been brought to speak. Leibnitz bears witness to a hound in Saxony, that could speak distinctly thirty words.—*Medical Gazette.*

Capacity of Negroes.—Professor Blumenbach possesses a little library of works written by negroes, from which it appears, he says, that there is not a single department of taste or science in which some negro has not distinguished himself.—*Med. Gaz.*

Brute animal Hay-makers.—Marmots, in the strictest sense, make hay; they bite off the grass, turn it, and dry it in the sun. It is reported that they use an old she marmot as a cart. She lies on her back, the hay is heaped on her belly, and two others drag her home.—*London Medical Gazette.*

Diffusion of Seeds in the Violet—The seeds of this natural order of plants are contained in a capsule of a single loculament, consisting, however, of three valves. To the inner part of each of these valves the seeds are attached, and remain so for some time after the valves, in the process of ripening, have separated and stood open. The influence of the sun's heat, however, causes the sides of each valve to shrink and collapse, and in this state the edges press firmly upon the seed, which from being before apparently irregular in its arrangement, comes into a straight line. The seeds, are not only extremely smooth, polished, and shining, but regularly egg-shaped; so that, when pressed upon by the collapsing edge of the valve, it slides gradually down the sloping part of the seed, and throws it with a jerk to a considerable distance. There is another part of the contrivance of nature, for the same purpose, in the Violàceæ, worthy of remark. Before the seed is ripe, the capsule hangs in a drooping position, with the peristing calyx spread over it like an umbrella, to guard it from the rain and dews, which would retard the process of ripening; but no sooner is the ripening completed, than the capsule becomes upright, with the calyx for a support. This upright position appears to be intended by nature to give more effect to the valvular mechanism for scattering the seeds, as it thus gains a higher elevation (in some cases more than an inch) from which to project them; and this will give it, according to the laws of projectiles, a very considerable increase of horizontal extent.—*Rennie.*

Influence of Trees on Climate.—The cutting down of forests, particularly on high grounds, has been remarked to diminish the quantity of rain, by diminishing, it is supposed, the attraction for clouds. The fact, however it may be explained, has been ascertained on a large scale in America. In Kentucky, for example, many brooks are pointed out which now fail in summer, a thing which was unknown twenty or thirty years ago. In New Jersey, where the woods have been more extensively cleared, some streams have been altogether dried up. On the contrary, many streams in the United States have rather increased since the clearing of the woods; because, though the quantity of rain may be possibly diminished, the compact bed of forest leaves formerly retained the water on the surface, and exposed it to rapid evaporation; whereas the tillage which has been introduced, allows the water to penetrate to some depth, and to afford a more permanent supply for springs and streams.—*Rennie.*

Effects of Climate on Human and Vegetable Life.—Where the spruce

and Scotch pines, and where bushes will not succeed, the nature of man seems equally defective. He sinks in the struggle with necessity and the climate.—*Von Buch's Lapland.*

This rule, however, is by no means without its exception. Mr. Harwood, arguing from the effects of the atmosphere in the vicinity of the sea, which, as he says, containing a portion of the muriates over which it has passed, is favourable to animal, but pernicious to vegetable, life, draws the conclusion, too general, certainly, that the air best adapted to vegetation is unpropitious to animal life, and *vice versâ*. In fact, it may well be doubted if nature has fixed any general rule; since daily experience proves that different species of animals, even different races of the same species, are variously affected by the same air.

Method of finding the Course of the Air when the Wind is still.—Place a basin of water in a free exposure, throw a red hot cinder into it, and observe how the smoke which it produce inclines. Sailors throw a piece of live coal into the sea for the same purpose; and also wet a finger, hold it up in the air, and then by feeling which part becomes (by evaporation) cool, they judge of the direction of the current of air. An instrument on the last principle has been invented by Dr. B. M. M. Forster.—*Mec. Mag.*

Excessive fall of Rain.—At Joyeuse, in the department of the Ardèche, during October, 1827, rain, thirty-six inches in depth, fell within eleven days; and on the 9th of that month, twenty-nine and a quarter inches fell within the space of two hours. The barometer remained nearly stationary, at two or three lines below the mean altitude, notwithstanding the continuation of the most violent thunder and lightning during the whole time.—*Annales de Chimie.*

Swarms of Butterflies.—An immense swarm of butterflies, of the species called the Painted Lady, the Belle Dame of the French, the Papilio cardui of Linnæus, forming a column of from ten to fifteen feet broad, was observed in the district of Grandson, Canton de Vaud. They traversed the country with great rapidity, from north to south, all flying onwards low, equally and closely together, and not turning from their course on the approach of other objects.

The fact is the more singular, as the caterpillars of the Vanessa cardui are not gregarious, but are solitary from the moment they are hatched. Professor Bonelli of Turin, however, observed a similar flight of the same species of butterflies in the end of the March preceding their appearance at Grandson. Their flight was also directed from south to north, and their numbers were immense. At night the flowers were literally covered with them. Towards the 29th of March their numbers diminished, but even in June a few still continued. They have been traced from Coni, Raconni, Susa, &c. A similar flight of butterflies is recorded, at the end of the last century, by M. Loche, in the Memoirs of the Academy of Turin. During the whole season, those butterflies, as well as their larvæ, were very abundant, and more beautiful than usual.—*Mém. de la Société de Phys. et de Hist. Nat. de Genève.*

Discovery of Lignite in Russia.—A mass of fossil wood has been discovered by M. Lichfeldt, on one of the gults of the Danube, named Yalpoug, about fifty versts from the fortress of Ismael. This fossil wood may become of great importance in that part of Russia, now entirely deprived of forests. The lignite is found in the form of fossile masses, of a greyish colour, but passing in the lower portions into a deep black. In the upper parts are found quantities of the *débris* of wood, covered with bark, white, thick, and friable; the pieces pressed one upon another, and intermixed with the husks

of grain. The wood, according to M. Lichfeldt, is that of the lime tree. It lies nearly horizontal between coarse sand and calcareous clay; the first in form of a wall, and the latter serving as a roof. Here many shells are found. The sand is separated from the stratum of lignite by about six inches of a resinous clay, in the lower part of which a great number of shells of different sorts are found. The clay which covers the lignite is very slaty, and where they come in contact, an infinite number of small shells occur, chiefly Donax, Cardium, and Turbo. Over this lies an argillaceous sand even to the roots of the green sward. It is everywhere accompanied by plastic clay. —*Gornoi Journal.*

Beavers on the Severn.—About a mile to the north of Worcester, a little brook enters the Severn, called Babourne, or Beaverbourne, to the present day, from the beavers (Castor Fiber) that formerly inhabited the brook; a little island in the Severn, near the spot, is still known as the Beaver island; and, higher up the stream of the Severn, is a flat green island, called *Bevereye*, which also gives its name to an adjoining hamlet. How late the beavers remained here is unknown; but the Severn was not navigable near Worcester in early times, from the weirs and rapids that obstructed its course. Giraldus states that beavers were very scarce in Wales in the twelfth century.—*Mag. of Nat. Hist.*

Museum at Norwich.—This establishment owes its origin to a few scientific and public-spirited individuals residing in Norwich and its vicinity, who, in 1824, united themselves for the purpose of promoting the study of natural history. At this time, a body of laws and regulations were drawn up, a president, vice-president, and a committee of twelve gentlemen appointed, for the transaction of business, and apartments taken in the Haymarket, under the rooms of the Literary Institution, for the reception of their future collection. The late president of the Linnean Society, Sir J. E. Smith, was elected president, which office he filled till his death; on which occurrence, Dawson Turner, Esq., of Great Yarmouth, author of "Synopsis of British Fuci," &c., &c. was appointed. The present object of this society is confined to collecting specimens in natural history, together with coins, antiques, and miscellaneous articles which are objects of curiosity and admiration, as well to the general as the scientific observer; hoping, by this means, to excite a spirit of inquiry, and promote the pursuit of this interesting and engaging study. Should this attempt be successful, in inducing many to support the establishment by their purses and patronage, they will be enabled to pursue their plans of publishing their proceedings, establishing lectures, and adopting such means as would render the establishment more effectual in disseminating that spirit and that knowledge which it is their wish to promote.

Their museum now contains several skeletons and parts of skeletons, animals, and birds, including the hippopotamus, elephant, buffalo, crocodile, and lion; a few animals preserved; about 300 specimens of ornithology, chiefly British; a valuable cabinet of South American insects, consisting of about 4000 specimens; a cabinet of British insects, consisting of about 2000; a few specimens of conchology, and about 350 specimens of mineralogy and geology, besides 300 specimens of fossil organic remains. In botany it possesses but few specimens, chiefly from Switzerland.

To these may be added, a small collection of coins, Roman and other antiquities, various instruments of war and numerous other articles from different countries, and an Egyptian mummy and sarcophagus.

The whole are arranged, in two rooms, in glass cases and cabinets; and the curator is always ready to show those which are not openly displayed, and to give information relative to all. Attendance of the curator is from 10 to 6; and although admission is, by law, restricted to persons introduced

by subscribers, yet the freest admission is, at all times, attainable.—*Mag. of Nat. Hist.*

Habitations of the Caddice, Water Moth.—The caddices, in the larva state, live in the water, and, in order to protect themselves from being devoured by other aquatic animals, they select pieces of wood, leaves, stones, &c. which they cement together by a gluten with which they are provided, and thus form tubular habitations, the interior of which they line with a fine silk, spun by themselves. Some of these habitations are composed of minute stones, so arranged as to exceed the skill of any workman; the joints not only fit exceedingly close, but the internal part is completely smooth and circular, while all the angular parts of the stones are placed on the outside, and the cement used is so strong, that boiling water will not separate them. It frequently happens, that after they have formed their habitations, they find them too heavy to carry with them; in that case, they select a piece of wood, or any other light substance that will float, and which they attach, by means of their gluten, to the extreme end of their case, which renders it more buoyant in the water, and thus enables them to move from place to place with facility. When their habitations are too light, they then attach small stones, shells, &c. to them, in the above manner, which renders them heavier, and prevents the current of water from carrying them away.—*Gill's Technological Repository.*

Superiority of Chinese Silk Worms.—By certain experiments made by the Professor Giovanni Lavini, on 150 grains of the seed of silk worms of China, he found, that 10,000 eggs weighed 150 grains; second, that as well when just come to life, as in the first and second stages, the worms refused the leaves of the tartaric and of the papiriferous mulberry, and other trees substituted for the mulberry, and died from starvation; third, that notwithstanding that by these experiments, tried at the beginning of the three first stages, so great a quantity was lost, he obtained 28 pounds of cocoons, white and compact, whose weight would correspond to about 4½ rubbi *, to every ounce of seed; fourth, that about 210 cocoons formed a pound in Piedmontese weight of 11 ounces to the pound, while of the cocoons of the common silk there was not required more than 96, 100, and 104; fifth, that thus from 10,000 eggs, worms, it may be said, since it appears they all came to life, only 5880 cocoons were obtained, in consequence of the mortality of the worms occasioned by the want of nourishment; sixth, that from 100 cocoons there proceeded 94 butterflies, 43 males and 51 females. From another quantity of 150 grains of seed, at Sommariva del Bosco, the produce was only 20 pounds of cocoons, hard and white, and valued at 27 new livres † the rubbo.

From other 150 grains of seed, in Turin, the quantity obtained was 10 pounds of cocoons, and these spotted, incompact, but white; it is thought, in the absence of the master, the worms had been fed with damp leaves.

It results from these experiments, that notwithstanding all disadvantages, the Chinese worms are a desirable object of cultivation; that although their cocoons do not reach half the weight of common silk worms, yet that their quantity and value are far superior; the care they require is the same; and the consumption of leaves nearly equal.—*Bibl. Ital.*

Transplantation of Hair.—The Signor Dottore Domenico Nardo addressed a letter to the Academy of Padua, in 1826, on the subject of the growth of hair after death, and even after its separation from the body. The latter property had been previously observed by Krafft. The Signor Nardo recounts the results of experiments made on his own person, in the trans-

* The rubbo is a weight of twenty-five pounds Piedmontese.

† About twenty-four to the pound sterling.

plantation of hair, and relates, that by transporting quickly a hair, with its root, from a pore of his head, into a pore of his chest, easily to be accomplished by widening the pore somewhat with the point of a needle, introducing the root with nicety, and exciting within the pore itself, by friction, a slight degree of inflammation, the hair takes root, continues to vegetate and grows; in due season changes colour, becomes white and falls.—*Padua, Giornale di Letteratura Italiana.*

[As the transplantation of trees appear an, art likely to bestow ornament and beauty on barren landscapes, so may the transplantation of hair, under clever disciples of the Signor Dottore Dominica Nardo, bestow a natural covering upon a bald crown, or invest the beardless cheek with *moustaches*, which even a hussar might envy.]

Bears.—The bears in the forests of Moldavia and Wallachia, disturbed, it is inferred, by the tumult of war, have made many incursions into the eastern provinces of Austria. They have penetrated by the Czikes Stuhl from Moldavia into Transylvania, and have done considerable damage. A great number of other beasts of prey, and especially wolves, accompanied them in their excursions.—*Daily Papers.*

New Vegetable Wax.—The naturalists of Antwerp have been puzzled by a new species of vegetable wax, which has lately arrived in the Netherlands from Batavia, to which place it was sent from Japan. Further than this, the source whence it was derived, was unknown; but it was affirmed that it was a substance deposited by bees on certain trees in Japan. The wax, in the state in which it arrived at Antwerp, was formed into cakes of different thickness, each bearing on its convex face the impression of the vase into which it had been fused. The colour was that of common white wax; but it was less hard, less adhesive, and less kneadable, than that substance; the odour was that of rank cerate. It most resembled the wax produced by the cow-tree. (*Urtica galactodendrum.*) The result of experiments made on this substance, showed that its properties were not identical with those of any wax before known, and that it was capable of being used for making candles. —*Bull. Univ.*

Elephant Skeleton.—Mr. Cross, the proprietor of the Exeter-change establishment, has caused the bones of the enormous elephant, whom it was found necessary to destroy some time ago, in consequence of his exhibiting symptoms of madness, to be anatomically united; and the skeleton, in an erect position, now occupies the den in which the animal resided during his life. The articulations are perfect, not a bone is absent. The head, which appears to have been pierced by many bullets, is 13 feet from the ground, the top of the back is 12 feet. The bones weighed 876 lbs.; the skin 17 cwt.; it is eight inches higher than the skeleton in the Jardin des Plantes, at Paris.—*Daily Papers.*

§ 3. Medical Science.

Remedy against Poison through the Blood.—A remedy against the effects of poison, in cases in which the virus acts through the blood, as in bites of venomous animals, &c. has been recently submitted to the 'Académie des Sciences,' by Dr. Vernière. The mode proposed proceeds on the simple principle that the filling of the veins will arrest the progress of absorption: and instead of confining the attempt at cure, as hitherto, to the mere removal of the poison from the surface, seeks it in the veins itself and expels it from the system. This is effected by confining the absorption to the member affected, or slackening its progress, by means of ligatures, until an injection to repletion is made into the rest of the system; then drawing the blood, by incision, from the poisoned part. The following experiments made by Dr. Vernière, on a dog, will better explain this process.

After placing three grains of alcoholic extract of vomick nut in a wound made in the paw of a young dog, he placed a ligature above the shoulder joint of the poisoned member. He then injected slowly through the jugular vein, as much warm water as the animal could bear, without greatly suffering; he then opened, below the ligature, the vein of the poisoned member; and after having drawn some ounces of blood, injected them into the jugular vein of another dog. This dog died immediately, in violent convulsions. In the mean time, the wound of the first dog having been carefully cleansed, a little blood was made to flow from it, and the animal was set at liberty. He gave no signs of having been affected by poison: eight days after, he was in perfect health, when he was sacrificed for other experiments. It is explained, that besides the effect of arresting the absorption of poison produced by the filling the veins, another cause in this treatment had opposed the poisoning, which was this, that the current of the blood to the vein opened, flowing from the affected artery only, the poison was compelled to follow the course of the blood in the vein, and it was thus thrown out of the system.

The author of this invention, aware of the objection in practice to the evil of injecting water through the veins, imagined the local repletion of the poisoned part, and details experiments made by him to ascertain the effect of such partial treatment, which succeeded most satisfactorily.—*Memoire read to the Academy, as reported in Le Globe.*

Lithotomy.—Vincenzo di Kern, surgeon to the Emperor of Austria, in his work Die Steinbeschwerden der Harnblase, &c. (of the diseases of the bladder and operations for the stone), Vienna, 1828, published with a view to enforce the advantages of the cystotomy mode of operating, asserts, that he had operated 334 times in lithotomy, and with such success, that 31 individuals only sunk under the operation.—*Biblioteca Italiana.*

This exceeds considerably the average success in England, as stated by Sir James Scarlett, on occasion of the late action for libel, Cooper v. Wakley. The failures in England, he was instructed to say, were two in fifteen. It should be observed, however, that the interests of Sir James's client required that the failures should be rated as highly as possible.

An official statement of the operations at the Royal Amphitheatre at Naples, in the course of the year 1824, reports the number of failures as five in thirty-two. Operations on patients between the age of two and ten years, fourteen, one death; between ten and twenty years, eleven operations, one death; between twenty and thirty years, three operations, one death; between thirty and forty years, one operation, one death; between forty and fifty years, three operations, one death.—*Giornale Med. Nap.*

Breeding Leeches.—The Herr Mehrer of Maulbronn, by turning his attention to the care of leeches, has succeeded in introducing the breed of those animals into Wurtemberg, and in producing them in such quantities as to dispense with all importation from abroad. He received the agricultural prize of 20 ducats and a silver medal, as a reward for his efforts, at the last distribution of the prizes for industry given by the King, of Wurtemberg.—*Allgemeine Literatur Zeitung.*

Properties of the Seeds of Jalap.—From the observations and experience of the Professor Lavini, of Turin, it appears that the jalap plant, the Peruvian wonder (mirabilis jalapa), besides ranking as an ornamental flower, and yielding a purgative root, furnishes seeds from which, when dried and powdered, an amilaceous drug is obtained of the third of their original weight.—*Calandario Georgico of Turin.*

Evil consequences of Rocking Children.—It is doubtful whether the practice of rocking infants, when often repeated, be not the origin of many of the diseases of children. When the human offspring first begins to make use

of its faculties, and to give proof of its being sensible to existence, even should this be done by infantine cries, is it right to stop those cries and to prevent its paying that tribute to nature? The rocking of the cradle brings on sleep only through the stupor it produces on the senses. Such a motion cannot but offend the delicate fibres of the brain of an infant, injure his digestion, sour the milk from which it derives its nourishment, and turn it into curds. —*Bibl. Ital.*

The Plague.—The following remarks on the plague are the fruits of the observations of an Italian Physician, who, during five years' residence at Alexandria, had frequent opportunities of noticing the character of that pest, who was himself attacked with it in 1815, recovering after two months of violent suffering, which left scars ineffaceable, and a year of convalescence; during which time, having no fear of relapse, he visited the other sick without any apprehension from contagion.

1. The plague is indigenous in Egypt; but its manifestations are dependant on many causes, which, it appears, can combine only between the months of March and the end of July.

2. Contact is not of itself sufficient to communicate the plague: a certain predisposition is required, without which the pestilential virus does not operate.

3. For the plague to propagate from one place to another, it is necessary that the virus be favoured by a certain atmospherical constitution, and by the combination of many circumstances, without which the virus cannot be developed.

4. Negroes, and new comers, are more liable to contagion than the natives and persons accustomed to the climate.

5. In certain years the plague attacks, in preference, children, wounded men, the timid, those who are disposed to weakness, and in general all individuals who have experienced any recent change. In this case, those persons who observe rigorous quarantine are scarcely more secure than those who walk the streets.

6. In other years the plague seizes in preference full grown persons, men robust, and of strong constitution; but in this case those persons only who expose themselves are the victims. In these years, persons engaged in the oil trade are less susceptible than those of other professions; and the inhabitants of the consul's houses (oquelles) in quarantine run no risk at all.

7. In the years in which the plague appears in an asthenic character, all aid of medicine is useless: all succour should be confined to assisting nature in its crisis.

8. In the years when the character of the plague is sthenic, the most violent depressives, administered in copious doses, but with prudence, in the first stage, which is generally very short, may produce the most salutary effects.

9. The plague is capable of attacking several times the same subject, but very seldom twice in one year.

10. All the cacochymies may exist at the same time as the plague; but will not act at the same time.—*Bull. Univ.*

School of Surgery in Alexandria in Egypt.—After many vain efforts, the perseverance of Mahmoud Ali has at last succeeded in forming a school for surgery in Alexandria. As the professors, for the most part, understand little or no Arabic, the expedient is resorted to of composing their lectures in the Italian or French language, and getting them translated. The great difficulty to be overcome, arose from the opposition of the Ulemas, who regard the study of anatomy as a profanation of the dead. These, however, after much negotiation, consented at least to give the affair their connivance, and at this moment the study of anatomy is pursued with the same freedom in Egypt as in Europe. The pasha has fitted up, for the use of the professors, the military hospital of Abu-Dscebel (the Oldman of the Mountain,) and in the year just now past, a course of medical lectures has been

already given in it. In conjunction with the study of medicine, a course of instruction in the French tongue has been instituted; and, on the whole, great expectations are entertained with regard to the civilization of Egypt from this establishment. The number of students in the medical school last year was twenty-five in the first class; thirty-eight in the second; and eighty-three in the third class, according to the degree of progress which they had already made. In the French tongue, thirty-three in the first class; twenty-three in the second; and forty-five in the third.—*Das Ausland.*

§ 4. Agriculture and Rural Economy.

Co-operative system of Agriculture in Siberia.—Great and not unsuccessful efforts have been recently made to introduce a system of agriculture among the Cossacks to whom the defence of the Siberian frontier of the Russian empire is confided. These Cossacks, consisting of ten regiments, are organised on the model of the Hulans of the army, and possess a vast extent of country, the produce of which is devoted to their maintenance in a state of military service. In their case, the ancient custom among the Cossacks, that each individual should provide his own necessaries and accoutrements, has yielded to the desire of uniformity in military habiliments and array. The lands therefore are cultivated for the common benefit; the profits are divided into two parts: the first is applied proportionally to the maintenance of each individual Cossack: the second forms a fund for the general wants of the army. The General commanding in chief the division has spared no pains to make this system popular with the tribes over which he presides: he has procured for them all the land capable of cultivation and not hitherto submitted to the share, and has used all possible means to improve the system of agriculture. His labours have not been in vain; and the reports of the sowing and harvest of the country sent to the Society of Rural Economy at Moscow, prove the great advance that has been made. The Cossacks become every day more attached to a species of industry, the advantages of which are become obvious to them; and they feel pride at seeing new establishments every year arising in their country. They possess already a cloth manufactory of fifty looms, in which machines of the newest invention are to be seen, and which is capable of supplying the stuff required for the complete clothing of ten regiments.—*Bull. Univ.*

Potatoes.—On examining a thin slice of potatoe under the microscope, its structure will be beautifully seen. It will be found composed of different layers, of which the external one is often highly coloured, and contains a certain portion of a deleterious substance, which is found in most plants of the natural family to which the potatoe belongs. But the great mass of the tuber is composed of a substance occupying the place, and possessing the structure, of the pith of a young branch. Under the microscope it is seen to be almost entirely composed of cells of irregular form and size, which are sometimes filled, and sometimes contain conglomerations and clusters of beautiful little oval grains. These little grains remain unchanged in cold water, but when it is heated to about the degree that wax melts, they dissolve in it, and the whole becomes a jelly, and occupies a larger space than it did in the form of grains. When a potatoe is boiled then, each of the almost innumerable cells of which it is composed becomes a little vessel full of jelly, and if there be not a great quantity of starch in the cells, it may be gelatinized without bursting them. But if the number of grains or their size be very great, the cellular structure of the potato is ruptured on all sides by the expansion of the little masses of jelly, and the appearance of mealiness is produced. Hence we see that mealy potatoes are the most valuable, and waxiness is an indication of deficiency of starch or nutrient matter.—*Quarterly Journal of Agriculture.*

Qualities of Starch.—Starch is a most nutritious substance, and being tasteless, admits of being characterized by any flavour that is most palateable. The starch which is found in some tropical plants is indeed esteemed so valuable, that it is washed out of them and brought into Europe as a delicacy; thus, Indian arrow-root is starch procured from the root of a plant which is cultivated in the West Indies. Sago is obtained from the pith, or rather the central part of the stem, of several species of palm-tree; tapioca, from the root of a plant common in South America; and many others might be mentioned. Sago, however, is partially gelatinized by the degree of heat in which it is dried, and there seem to be other differences in the qualities of the starch produced from different plants and in different climates, though they all agree in chemical composition, and in being tasteless and highly nutritive.—*Quar. Jour. of Agri.*

Cultivation of Cotton and Tobacco in the Country of the Don.—The cultivation of cotton has been successfully introduced into the country of the Don by M. Krestschatitsky, a member of the Society of Rural Economy of Moscow at Paulousk, a village situated on an eminence twelve versts from the sea of Azof, between Taganrog and Marinopol. The same agriculturist has been active in introducing the culture of tobacco in the same district, and in this attempt also equal success has attended him.—*Bull. Univ.*

Difference between Tubers and Seeds.—Whatever may be the resemblance in the functions of tubers of roots and seeds, there is, among others, this important difference, that a tuber, as for instance a potato, produces an individual resembling its parent in all its features in kind and quality. The tuber keeps up the particular variety which produced it, and may be regarded as a continuance of the individual; while the seed has a constant tendency to destroy all varieties, and to bring back the plant to the natural form and characters of the species. Thus, by planting a potato, we can predict with certainty the kind which we shall dig from our field; but by sowing the seeds, we could not foretell what particular variety they might happen to produce.—*Quar. Jour. of Agri.*

Payment in kind of Farming Servants.—The attention of the rural economists of Germany has been much drawn of late to the system pursued and recommended by M. Albert, bailiff, in the Dutchy of Anhalt Coethen, of paying his farm labourers by a share of produce. The system of M. Albert, which is but a return to an ancient usage, is as follows. He enters into an agreement with his labourer, by which the latter engages for all the draught work, &c. to be done by horses, cattle, carts, &c. which are entrusted to him, and for which he is responsible. The men whom the contracting labourer calls to his assistance, to be at his own cost. For this he receives, 1st—the sixth part of the produce of grain and oleaginous plants; 2nd, provender for four cows; 3rd, four pigs of six months; 4th, eight picked ewes; and lastly, a piece of land adapted for the plantation of a certain quantity of potatoes, and another for cabbages and turnips. In the same manner M. Albert entrusts the whole manual labour of the farm to another countryman, who receives in return one eighth of the corn threshed, and a piece of land for the cultivation of potatoes and flax. To provide against the consequences to the labourer of bad harvest, a minimum is fixed, below which his remuneration cannot fall. This system has been applied by M. Albert, in several domains over which he has the superintendence. According to his statements, it has been attended with the most satisfactory results. Under the system before followed in the estates of Dornbourg, *e. g.*, the annual average expenses were 1171 imperial crowns 10gr., while the produce was 1071-10, making a loss of 99-18 every year. After the adoption of the new system, the income rose

the first year to 1350. In other farms, M. Albert represents his experiment to have been attended with like success.

The motive which first led to the adoption of this system was the embarrassment to which agricultural operations were subjected by the state of the currency. As a remedy for a want of currency, the idea was conceived of dispensing with a currency altogether. In this view M. Albert was encouraged, by observing that on an equal quantity of corn land the expenses of the peasant to those of the great landholders, are in the proportion of one to four. This difference he calculated arose from the circumstances, first, of the peasant's putting his own hand to the work; second, from his requiring more labour from his men; third, from his maintaining them at a less expense; fourth, from his keeping fewer beasts of labour; and lastly, from the greater care he takes of his farming utensils, and from his doing the required repairs himself. Hence the determination to put the labourers on the domain of Dornbourg, on a footing analogous to that of small farmers. The system of M. Albert has been combated by his countrymen, both on principles of theory and practice: with regard to the latter, his facts, and the consequences deduced from them, have been both attacked, and the difference in the produce of the farm at Dornbourg has been attributed to the bad agricultural management to which it was previously subjected. In the mean time, the Society of Agriculture of Mühlstadt appointed a commission to make enquiries on the subject. Their report, which corroborates the improved state of the farm, and is in some respects favourable to the system, is in others adverse, and throws a doubt on its general practicability. As a resource, however, against some embarrassments to which agriculture has been exposed, it deserves consideration.—*Bull. Univ.*

Vital parts of a Tree.—The innermost layers of the bark, and the outermost layers of the wood, are the most vital parts of the stem of a tree, and those on the healthy condition of which the health of the whole plant most immediately depends. Hence many trees continue to exist for centuries when the central part is completely decayed, or even not present, so that the trunk is a hollow cylinder, sometimes of most spacious dimensions.—*Quar. Jour. of Agri.*

Exhausting and Ameliorating Crops.—The causes which give to particular crops the character of being exhausting or ameliorating to the soil, depend either on their being allowed to mature their seed, on their particular mode of culture which admits of the tillage of the ground during their growth, and on their yielding manure. Wheat, barley, oats, and rye, are consequently exhausting. Turnips, carrots, parsnips, beet, cabbage, and rape, if cultivated for their leaves only, are ameliorating. In the case of the turnip, the mode of cultivation, and the quantity and quality of manure it produces, combine with the other circumstance of its not being allowed to mature its seeds, to render it one of the most ameliorating of all crops; whereas if allowed to run to seed, it becomes one of the most exhausting. Potatoes and beans, although allowed to mature their seeds, are considered among the ameliorating crops, because they admit of being cultivated at wide intervals, and permit the ground to be tilled completely during their growth; they also yield manure. Clovers, if used for herbage, or cut early for food, are ameliorating. If cultivated for their seeds, exhausting.—*Quar. Jour. of Agri.*

The Swedish Turnip.—The Swedish turnip is more nutritious and hardy than any of the common kinds of turnip, and is more liked by all animals. It remains sound and full of juice in spring, and even after it has put forth its flowering stems. It does not suffer, in the like degree, from those wounds upon its surface, to which all turnips are subject, from birds and other wild animals. This root is therefore a valuable and secure resource in

the latter part of spring, when the common turnips may have decayed and when the grass is not yet in sufficient abundance for the feeding stock. It is given to milch cows, and does not taint milk in the same degree as the common turnip. It is excellently well adapted, in its raw state, to the feeding of hogs. In the same state it is relished by horses, and furnishes a wholesome and succulent food, to be used along with the drier substances which the working cattle consume in winter.—*Quar. Jour. of Agri.*

Fertilizing Effect of Chlorine on Seeds for Sowing.—The employment of chlorine, or oxymuriatic acid in preparing seeds for sowing, is recommended by Mr. Rémond, as capable of increasing the produce three and fourfold what it would be in ordinary cultivation. The process is as follows. The grain to be first steeped for twelve hours in water from a river or fountain, never from a well; then to be added to the water sixteen or seventeen drops of oxymuriatic acid for every quart; the whole to be shaken together, in order that it may be well mixed. After six hours additional soaking under exposure to the sun, and beneath a glass bell, or for want of such an instrument, a frame of oiled paper, the seeds to be put into a cloth; then to be divided for the purpose of sowing, and mixed with a sufficient quantity of cinders, sand, or dry mould; after this to be sown, and the water in which they were soaked thrown over the ground which covers them. It is also recommended, when practicable, to water at intervals the plants with the acidulated water of oxymuriatic acid, in the proportions of that used in the steeping the seeds, in order to keep up the activity of their vegetation, and to favour the development of the plant.—*Bull. Univ.*

Difference in the Laws of Animal and Vegetable Life.—In the animal kingdom, the circumstances which accelerate the growth of the body favour the reproductive system; the period of puberty is uniformly earlier in domesticated than in wild animals, and in those which are fed plentifully, than in such as are scantily supplied with food. The reverse of this arrangement seems to prevail in the vegetable kingdom—the scantier the supply of nourishment, the earlier will a plant propagate its kind. Instances of the operation of this law are to be observed in the fact, that seeds which are new and fresh produce plants with more luxuriant foliage, and less inclined to run into flower and fruit; where luxuriance of leaf and great size are the objects aimed at in cultivation, the seeds used should be young; the contrary when it is desired to have good fruits, rather than straw, stem and leaves.—*Quar. Jour. of Agri.*

Rule of the Quality of Saltpetre.—The goodness of saltpetre is measured by the angle at which light is refracted in passing through it. As the angle is less, the quality is better. This angle varies very considerably. An angle of 5° is called par, and the variations from it are made up by increasing or diminishing, not the price, but the quantity: for every degree by which its angle of refraction exceeds 5, 1 per cent. in weight is allowed, and *è converso*. The inferior sort contains common salt: it is tested at Apothecaries' Hall, and the several refractions denoting the quality are marked upon the bags.—*Quar. Jour. of Agri.*

The paper from which this extract is made recommends the use of saltpetre as manure, and gives several instances in which it has been so applied with great and repeated success, especially in the cultivation of grass.

Abundance of Potatoes in Ireland.—In the spring of 1821, potatoes in Ireland were purchased at the rate of 1*s.* 4*d.* for twenty-one pounds; the same quantity might have been purchased this year for one halfpenny. A similar overflow of the staple of popular subsistence is without a parallel. —*Quar. Jour. of Agri.*

Patent Receipt for Manure.—Mr. Bernard Petre has obtained from the

Austrian government, a patent for five years, for a method of collecting manure in a way "to prevent the volatilization of gas, and to improve it to such a degree as to render it of six times the efficacy of other ordinary dung-heaps." The following is Petre's Patent Recipe. On an even and dry spot in the farmyard, lay a first bed fifteen to twenty inches deep, consisting of litter, straw, or leaves but little charged with excrement: with this may be mixed marl, bones and all sorts of substances susceptible of putrid fermentation; fold horned cattle or sheep on the bed so formed, for several successive nights, then spread over it to the height of one-fourth of an inch of peat charged with sulphur, or ash lye, or the one-eighth of an inch of mere cinders; then cover the whole with good mould or marl. On this bed form a second of the same depth as the first, of the dung of different animals; then lay on wood ashes, to the thickness of one-eighth of an inch; or a quarter of an inch of peat, charged with sulphur, or of soap lye; or half an inch of cinders of potash, or merely common salt. As the heap gets dry, let it from time to time be watered. Lastly, cover it again with a three inch bed of slime or mud or marly soil, and finish with a bed of wood cinders, &c. as before. The simple cinders are the best for the purpose. When the mass is in high fermentation, and smokes, let it receive another covering of soil, of the depth of three or four inches. The heap should be bored occasionally, to be assured that the fermentation proceeds duly, to replace the soil when it has sunk, to moderate with water the fermentation where it is too violent, and to give access to the air when it is slow. When the fermentation has ceased, the heap should be thoroughly watered in order to prevent the ulterior effects of the decomposition, and the volatilization of the gas. Finally, break up the heap, mix the elements well together, divide them into smaller quadrangular vertical-sided heaps to be left to the action of the air. As these dry, rake them or break them up, and scatter them in the form of dust at seed time.—[This may be a good manure, but it did not deserve a patent, for it is no new discovery; the method has long been in practice amongst the peasants of Baden, under a more simple form.]—*Bull. Univ.*

Consequences of a Warm Spring.—If in one respect a warm spring is desirable, in consequence of the grass crop affording the cattle early nourishment, yet, in others, considerable disadvantages are connected with it: the worm creeps in on vegetables, and into orchards, consuming the blossoms, young cabbages, and even the leaves of the trees.—*Quar. Jour. of Agri.*

Cure of Dropsy during Gestation in the Uterus of the Cow.—This disease has appeared in the parish and neighbourhood of Beith, N. B., and proved very destructive. It consists of a superabundant quantity of water collected in the calf bed. It makes its appearance about the seventh or eighth month of gestation, and accumulates until the rim of the cow's belly is ruptured, producing inflammation, which very soon destroys the animal. The following method of care has been practised with full success, on seventeen cows in two years, by Mr. Andrew Wilson, resident of Beith. He makes a small incision with a sharp knife through the skin, about four inches above the flank on the right side: he then thrusts an instrument (the trocar) through the rim and calf-bed into the water, when he withdraws the stilette, and the water flows to the quantity of from thirty to forty gallons. He does not remove the whole of the water; and, in the course of seven or eight days, the cow picks calf, and she does as well for milking as any other cow which picks calf naturally. Cows in calf, of all ages, are liable to this disease, and the operation should be performed in the seventh or eighth month of gestation.—*Quar. Jour. of Agri.*

Improvement of Land.—The annual rental of an estate in Yorkshire was, some time ago, only 1600*l.*; it has since been raised to 7600*l.* Allowing

1000*l.* for the interest of the money spent in improvements (about 20,000*l.*), and half the remainder for the change in the times, there will still remain a surplus income of 2500*l.* per annum to be ascribed solely to the improvement in cultivation and management.—*Quar. Jour. of Agri.*

Transplantation of Cochineal to Java.—The success with which the cultivation of the nopal, and the breeding of the insect which produces cochineal, has been practised at Cadiz, and thence at Malta, is well known. A French apothecary is said to have made the experiment in Corsica, but on a very confined scale; and the King of the Netherlands, on information that the isle of Java was well adapted for the cultivation of this important article of merchandise, determined on attempting the transplantation into that colony. As the exportation of the trees and of the insect is prohibited by the laws of Spain, some management was required to acquire the means of forming this new establishment. The following were those resorted to. His majesty sent to Cadiz, and there maintained, for nearly two years, one of his subjects, a very intelligent person, who introduced himself, and by degrees got initiated into the *garden of acclimatation* of the Economic Society, where the breeding of this important insect is carried on. He so well fulfilled his commission, for which the instructions, it is said, were drawn up by his royal master himself, that he succeeded in procuring about one thousand nopals, all young and vigorous, besides a considerable quantity of insects; and moreover carried on his plans so ably as to persuade the principal gardener of the garden of acclimatation to enter, for six years, into the service of the King of the Netherlands, and to go to Batavia. Between eight and ten thousand Spanish dollars are said to have been the lure held out to him to desert his post. In the service of the society he gained three shillings a day, paid in Spanish fashion.* A vessel of war was sent to bring away the precious cargo, which being furtively and safely shipped, the gardener and the insects were on their voyage to Batavia before the least suspicion of what was going on was entertained by the society.—*Bull. Univ.*

Prolific Vegetation.—In the spring of 1823, in the farm of Mr. Shirreff of Mungoswells, East Lothian, a vigorous wheat plant, near the centre of a field, was marked out, which produced sixty-three ears, that yielded 2473 grains. These were dibbled in the autumn of the same year; the produce of the second and third seasons sown broadcast in the ordinary way, and the fourth harvest produced nearly forty quarters of sound grain. In the spring of this year, Mr. Shirreff planted a fine purple-top Swedish turnip, that yielded (exclusive of the seeds picked by birds, and those lost in threshing and cleaning the produce) 100,296 grains, a number capable of furnishing plants for upwards of five imperial acres. One-tenth of an acre was sown with the produce, in the end of July, for a seed crop, part of which it is in contemplation to sow for the same purpose in July 1829. If the produce of the turnip in question had been carefully cultivated to the utmost extent, the third year's produce of seed would have more than supplied the demand of Great Britain for a season.—*Quar. Jour. of Agri.*

White Hoofs in Horses.—Even in a wet soil and climate, white hoofs are more brittle and more liable to accident and lameness than black ones; and, in the stony and more arid soils and climates, white hoofs do not stand nearly so well, and are much more liable to break and to contract than those of a dark colour; and, in point of fact, horses having white legs and feet do not bring so much money as those of precisely the same description which have them not.—*Quar. Jour. of Agri.*

Introduction of Turnips into Great Britain.—Until the beginning of the eighteenth century, this valuable root was cultivated among us only in

* Say half, at least, in arrear.

gardens or other small spots for culinary purposes; but Lord Townshend, attending King George I. in one of his excursions to Germany, in the quality of secretary of state, observed the turnips cultivated in open and extensive fields, as fodder for cattle, and spreading fertility over lands naturally barren; and, on his return to England, he brought over with him some of the seed, and strongly recommended the practice which he had witnessed to the adoption of his own tenants, who occupied a soil similar to that of Hanover. The experiment succeeded; the cultivation of field-turnips gradually spread over the whole county of Norfolk; and, in the course of time, it has made it sway into every other district of England.—*Quarterly Review.*

Enriching Properties of Water.—Water, even in the purest state in which it can be found, is an enricher. Spring-water uniformly produces the earliest bite, and calcareous springs the best grass. Water in which flax has been steeped, and which the farmer is often puzzled to get rid of, without polluting the streams in his neighbourhood, forms a superior substance for irrigating; but, in short, the more abundantly water is impregnated, either from running through a track of rich soil, or from receiving the refuse of towns and manufactories, or even from being exposed to mixture with putrid substances (and so becoming putrid itself,) in ponds or in reservoirs, so much the more are its effects beneficial; and it has been frequently remarked, that no watering is so enriching as that which is given in summer floods.—*Trans. of the Highland Society.*

Use of Lime on Land.—Besides extirpating heath and coarse herbage, and bringing up white clover, lime has the immediate effect of sweetening pasture-grass. Cattle are fond of grazing where it has been used, and it likewise predisposes the ground to receive the full benefit of the animal dung which is dropped upon them.—*Trans. of Highland Society.*

Shelter afforded to Land by Snow.—A coat of snow affords shelter; and the most superficial observer knows that land, after being covered with snow, produces a better crop the following year, than if it had been subjected to naked frosts. It will perhaps be argued, that snow may contain enriching matter as well as rain-water, and that its beneficial effects are attributable to that cause; but even when the ground is only partially covered, as in the case of stones turned up in trenching, and left on the surface during winter, the effect is the same, and can only be traced to the shelter which these stones supply.—*Trans. of Highland Society.*

Use of the Roller on Grass Lands.—In no branch of husbandry is the roller more an implement of utility than in the cultivation of grass. It renders the soil compact and solid; it encourages the growth of the plants, by bringing the earth close to every part of the root; it assists in filling up and levelling any inequalities in the surface of the field, thereby preventing surface water from remaining stagnant, and eradicating the grass from particular spots; and it tends to hinder the drought from penetrating, which is an effect of the utmost importance. In fact, a grass-field cannot be too often rolled; and it is not going too far to assert, that the application of the roller in autumn to prepare the roots for resisting the winter frosts, and in spring to firm them after these frosts, every year while the field remains in grass, will amply repay the expense.—*Trans. of Highland Society.*

Manure.—The importance of saving the urine of cattle, for the purpose of manure, has justly been a favourite theme amongst the greatest agriculturists, but in no way can it be turned to such advantage, as by fitting earth to form a top-dressing for grass. Even when applied alone, and without any admixture, it improves grass to a high degree, and with little trouble, and at little expense, every farmer has the means of keeping up the fertility of his grass-lands, without robbing his other crops.

The refuse of soap, or soaper's ashes, and even soap-suds, or soapy water, may be used to good account, as top dressing, as may lime-rubbish of any kind, and soot, although it be some time after the application of the latter before cattle will relish the grass; but, in short, every kind of earth and manure, applied to the surface of grass-land, is productive of beneficial effects.—*Trans. of Highland Society.*

Best Temperature for Churning.—The cream should be kept at a moderate temperature in the process of churning. From experiments reported in the Transactions of the Highland Society, it appears that the degree of thermometrical temperature at which butter can be made, ranges from 45 to 75 Fahrenheit. Experiments agree in showing that the most proper temperature lies between 50 and 65; the greatest quantity of butter from a given quantity of cream is obtained at 60; and the best quality at 55 in the churn, just before butter comes: the heat rises four degrees during the operation of churning. At higher heats the butter comes quicker; but the quantity is diminished, and the quality is very inferior. The temperature at which butter from cream can be obtained in the greatest quantity, and of the best quality, is 53½ of cream, and 57½ in the churn before butter comes. When the heat is below 50, it should be brought up to the temperature required, by the assistance of hot water.—*Transactions of Highland Society.*

Goats of Thibet.—The project of introducing the breed of goats of Cashmere into Germany has not been very favourably entertained. One writer has pretended to show that the European goat, by a single cross, might be brought to yield the precious article for which so much money is sent into Asia. Another argues against the Asiatic animal, on the ground that a single sheep of a good breed will bring four times the profits of a goat of Thibet. And a third, M. Schmidt, rejects their introduction into Germany, because France has anticipated that country in the manufacture of the merchandise in which their down is used. M. Schmidt makes the following observations on the fleece of these animals. Judging by their fleece, there are, he says, two sorts of goats, one which may be called the race of Angora, with hair long and pendant; the other, the goat of Thibet, with hair short and stiff. The former has no down: the latter, on the contrary, is covered during winter with a down which is more abundant, and finer in those kept in the mountains. These two races, originally from Asia, have produced, by their mixture, aided by the influence of climate, many varieties. On examining, with attention, the European goat, it will be found also that the long haired ones have no down; or, if they have any, it is in very small quantity along the vertebral column: while of those which have short hair, there are to be found some which have a down spread over the entire carcase. This down grows almost to the length of hair in the spring, then comes off, and appears on the surface, to which it gives a grey tint. By the mixture of these breeds a bastard race is formed, which have more or less down; but it is observed that the offspring partake more of the nature of the dam than of the sire. The two principal importations of the goats of Asia into Germany are those of Mr. Wallner of Geneva, who procured them directly from Thibet; and of M. Lowenherz, who received them from M. Terneaux, so that the former are goats of Thibet, the latter Kirguises. The Emperor of Austria, the kings of Bavaria and Witemberg, all the Archdukes, and some private individuals, have procured goats of the former importation. They have been introduced into Saxony by M. de Buest on his domain of Tossfell.—*Bull. Univ.*

§ 5. Horticulture.

Tea.—The cultivation of tea is not general throughout the Chinese empire; the northern parts being too cold, and the southern parts too warm. The plant is the growth of a particular region, situated between the thirtieth and thirty-third degrees of north latitude, called the tea-country, *Tok-yen, Ho-ping, An-koy*, &c. There are some plantations near Canton, but they are few, and those that do exist are of no great extent. The trees are planted four or five feet asunder; they have a very stunted appearance; and they are not allowed to grow higher than is convenient for men, women, and children to pick the leaves. The gatherings take place from one to four times in each year, according to the age of the plant. It is only the difference in the times of gathering, and manner of curing, which causes the distinction in appearance, qualities and value; those which are gathered earliest in the spring, make the strongest and most valuable tea, such as pekoe, souchong, &c.; the inferior, such as congou, bohea, are of the latest gatherings—green or hyson, can be made of any of the gatherings, by a different mode of drying. The first gathering of the leaves begins about the middle of April, and continues to the end of May; the second lasts from Midsummer to the end of July; the third takes place during the months of August and September. When the leaves are gathered, they are put into wide shallow baskets, placed on shelves in the air, or wind, or mild sunshine, from morning till noon; then, on a flat cast-iron pan, over a charcoal stove, ten or twelve ounces of the leaves are thrown at a time, stirred quickly with a short-hand broom twice or thrice, and then brushed off again into the baskets, in which they are equally and carefully rubbed between men's hands to roll them; after which, they are again put into the pan in larger quantities, over a slower fire, to be dried a second time. When fired enough, the tea is laid on tables, to be drawn, or picked over, putting aside all the unsightly and imperfectly dried leaves, in order that the sample may be more even and marketable. To make singlo or hyson, the first two gatherings are chosen, and, as soon as picked from the trees, are put into the pan; next rolled, and spread thin, to separate the leaves, which adhere to each other; again well dried, spread, sifted, picked, and fired two or three times more (especially if it is damp weather), before it is in a marketable state.

The Chinese drink their tea without either milk or sugar; they partake of it plentifully at their meals, and very frequently in the course of the day. One mode of using it, amongst the higher ranks, is formed by grating into the cup balls made of the most valuable leaves, cemented together by some kind of tasteless gum.—*Gardener's Magazine.*

Method of Pruning—Canker in Trees.—In pruning, cut off from every shoot two-thirds of its length; the wood forms buds for the following year: as the tree gets crowded, or out of shape, take off a whole bough or branch with a saw. To cure cankering, take the trees up carefully, examine and prune both root and branch, and plant them again in similar fresh soil.

The precaution of flagging, paving, or gravelling, lest the roots get into bad soil and canker, is useless, since trees will never go into bad soil, if they have plenty of good to go into, any more than cattle will go into bad pasture, if they have plenty of a better quality.

The cause of the canker in trees is very similar to the cause of the scurvy in man; it is either a defect of the blood or blood-vessels; in trees, it is generally the defect of the latter, as it is never the ascending sap which causes it, but always the descending sap which is obstructed in its passage to the root. A wet autumn causes a superabundance of sap in the leaves, which being forced to return in an undigested state, the pores are too contracted to admit it in a regular way, and it forces new channels in the bark; the first frosty night converts such streams into ice, and they become what Mr. Forsyth

calls "small dots as if made with the point of a pin." Midsummer pruning is a good preventive.

If a tree throws out one or two very luxuriant shoots, while the others are quite weakly; it may be concluded, that it has thrown out one or two extraordinary luxuriant roots the preceding season: the rambler may be sometimes found by digging under the tree; if not, the tree should be dug up, and it will be surely found.—*Gardener's Magazine.*

Improvement in Gooseberries.—The heaviest gooseberries known fifty years ago, seldom exceeded 10 *dwts.*; in the neighbourhood of Manchester, the poor people by continued experience and perseverance, in raising new sorts, with all the disadvantages attending their situation in life, have brought the fruit to from 10 to upwards of 30 dwts.—*Gardener's Magazine.*

Culture of Potatoes.—Thick planting in potatoes, any more than in trees, is not the way to procure the greatest quantum of fruit on a certain surface. The following is the mode of culture recommended by Mr. C. Hale Jessop, nurseryman, of Chelfewham. Double-dig the ground, and, without manuring, plant the potatoes whole, two feet apart each way. When the plants rise, hoe and draw the earth up to them, moulding entirely round each plant, by which mode all have room to swell and bring their tubers to perfection. The soil is not much exhausted by this practice, and the potatoes are easily got at so as to mould them up, even in their last stage of growth. Next pick off the blossoms, a practice which has been proved to add to the produce one ton per acre.

Potatoes may be planted wherever plantations of trees for timber are made, as the spaces between the trees can be profitably used without detriment to them; and from the way the potatoes are moulded round, whatever rain falls in a dry summer is quickly conveyed to the roots of the newly-planted trees, as it runs down the hill of earth containing the potatoes.—*Gardener's Magazine.*

Horticultural Societies in Paris.—A society, under the title of La Société d'Agronomie Pratique, has lately been formed in Paris, in opposition to the Société d'Horticulture. It proposes to embrace all the sciences which have relation to agriculture and horticulture; it will publish a journal entirely consecrated to subjects which contribute to the progress of culture; its members will also give public and gratuitous courses of lectures on botany and vegetable physiology applied to horticulture, and on all the branches of the natural sciences which bear relation to agriculture.—*Gardener's Magazine.*

Comparative Education of Gardeners in France and England.—With regard to books on agriculture and horticulture, those published in Paris are much more scientific than those published in London. There are not, perhaps, half a dozen practical gardeners in Great Britain, who, strictly speaking, can be called scientific men: but there are several times that number in France, who have gone through a complete course of instruction, theoretical and practical, under the late M. Thouin, at the Jardin des Plantes; who understand and apply the Jussieuean system of botany, and reason on the operations of pruning and culture, in accordance with the current principles of vegetable physiology and chemistry. But all the other gardeners are in the lowest state of ignorance; whereas, in Great Britain, 10,000 gardeners may easily be found who understand botany, who are general readers, and who are in fact exceedingly well informed men on every subject. In France there seems no gradation from the highly cultivated and intellectual professors, authors, and members of societies, of the metropolis, to the most deplorably ignorant, and, in comparison with England, miserably fed, mass of country population.—*Gardener's Magazine.*

Road-side Plantations of Fruit Trees.—The road between Strasburg and Munich (the latter city being in altitude the second in Europe), forms an ascending winding avenue of fruit trees, 250 miles in length. The greater number of these trees are ungrafted cherries, which succeed in the poorest soil, and in the most elevated and cold situations, better than any other fruit tree; their timber is valued by the cabinet-maker, and from their fruit is distilled kirschwasser, a spirit of esteemed flavour, and in great demand. The kind of fruit tree next in number in this avenue is the apple, grafted; its fruit is used for making cider; and it is also cut into slices and dried, for putting into soups in winter. The remaining sorts are the walnut, pear, and the plum. In the neighbourhood of the towns, these avenues have been planted a good many years; but in many places where the situation is elevated and the soil poor, it is only within the last three or four years that the practice of planting cherry trees has been adopted.—*Gardener's Magazine.*

Ornamental Churchyards. — Nothing could be easier than to render every country churchyard in Britain an arboretum and herbaceous ground, with all the trees and plants named, provided the clergyman would give up his right to the grass, which with all weeds must be destroyed, and the grave-digger would be content to acquire a very little knowledge of gardening. By laying a burying-ground out in beds of two graves in width, or about sixteen feet, as at Nancy, planting the trees along the walks, and the rows of herbaceous plants across the beds, and parallel to and between the graves, the thing is done.—*Gardener's Magazine.*

Attar of Roses. — Ghazeepon is celebrated throughout India, for the beauty and extent of its rose gardens; the rose fields occupy many hundred acres; the roses are cultivated for distillation, and for making attar. The price of a sieve, or two lbs. weight (a large quart,) of the best rose-water, is eight limas, or a shilling. The attar is obtained after the rose-water is made, by setting it out during the night, until sunrise, in large open vessels exposed to the air, and then skimming off the essential oil which floats on the top. To produce one rupee's weight of attar, 200,000 well-grown roses are required. The juice, even on the spot, is extravagantly dear, a rupee's weight being sold at the bazaar (where it is often adulterated with sandal-wood oil) for 80 *s. r.*, and at the English warehouse for 100 *s. r.*, or 10*l.* sterling. Mr. Melville, who made some for himself, said he calculated that the rent of the land, and price of utensils, really cost him 5*l.* for the above quantity.—*Bishop Heber's Narrative.*

§ 6. Domestic Economy.

Preservation of Apples.—Apples to be preserved should be laid on shelves; the fruit should be gathered before it is fully ripe: neither apples nor turnips will keep, nor have a good flavour if allowed to grow to their full size. The best place for keeping apples is like the best place for keeping ale, &c., viz., a good cellar.—*Gard. Mag.*

Tender Meat.—The surest and most convenient way of rendering meat or poultry speedily tender, is to wrap it in a cloth to preserve it from dirt, and expose it the preceding evening to a gentle and constant heat, such as the hearth of a fire-place.—*Jour. des Conn. Usuelles.*

To keep Eggs.—It had been long since averred that eggs would keep perfectly well for ten months in lime water. A still more effectual way of preserving them has been tried: it is that of depositing them in a weak solution of hydrochlorate of chalk (thirty grains of salt to a pound of water), the liquid always above the eggs, and to stand in a cool situation. So treated they have been kept for a whole year, preserving all their fresh-

ness. It has been suggested, that the sulphate of iron would have the same effect.—*Repertorium für die Pharmacie.*

New Method of Stopping Wine-Bottles.—Tie a piece of bladder or parchment over the mouth of the bottle instead of using cork: the wine, says an amateur of great experience, will acquire in a few weeks all the qualities of age, which it would require years to give it on the old system.—*Jour. de Paris.*

Eggs throughout the Year.—Few poultry yards can vie with that of Captain Dunn, of New York, who has taken extraordinary pains with his breeds. With a view to their improvement he has even visited China, and collected races from all countries. The following are given as the results of his experience. With regard to fowls he is convinced that the cross breeds issuing from the English race, and the great sort of *Malacca*, are the best to breed from. As the winter at New York is rigorous, he finds it necessary, in order to have eggs all the year round, to heat the poultry roosts:—this he effects by means of steam. The kind of artificial incubation thus produced he has found very advantageous in the case of ducks and geese, but less so with fowls than the natural process. In the chambers appropriated to the ducks and geese, basins of water must be placed, into which the ends of the steam tubes are introduced;—this water so warmed is very conducive to the thriving of ducklings and goslings. In order to make the hens lay throughout the winter, it is recommended to mix with their food pounded oyster or other shells, and slate also pounded. The lime contained in the oyster-shell contributes to the formation of the shell, and the slate heightens the flavour of the meat of the egg.—*Bull. Univ.*

Loss of Weight by Cooking in Butchers' Meat.—

	lb.	oz.
4 lbs. of beef during boiling, lose - - -	1	0
Ditto, ditto, ditto, roasting, lose - - -	1	5
Ditto, ditto, ditto, baking, lose - - -	1	3
Ditto, of mutton during boiling, lose - - -	0	14
Ditto, ditto, ditto, roasting, lose - - -	1	6
Ditto, ditto, ditto, baking lose - - -	1	4

—*Jour. des Conn. Usuelles.*

The degree in which the meat is cooked—for boiling and roasting in France, and the same processes in England, as we all know, differ most widely—would most materially affect these results. The quality of the meat also, and length of time occupied in arriving at the same degree, would have their share in the operation.

Peas and Beans roasted for Food.—In Spain, Sicily, and the southern parts of Italy, these seeds, and even those of lint, are roasted, constantly kept in the shops, and found in the markets in this state, and much esteemed by way of dessert among those of little fortune, particularly women and children. To prepare them, a large panful of sand is put upon the fire, into which, when the sand is heated, the peas or beans are thrown, and mixed well with it. After they have been equally roasted, without burning, in this way, the sand is separated from them by a sieve, and in a dry place they may be kept in this state for any length of time.—*Bull. Univ.*

§ 7. Mechanical and Useful Arts.

Speed of American Steam-boats.—The greatest speed to which the English steam-boats have attained, furnished with the best engines of Bolton and Watt, does not exceed nine miles an hour. We are not able to say how rapidly American steam-boats *have been propelled through the water*, but we are quite sure that they have much exceeded this rate. The distance

from Cincinnati to Louisville is one hundred and fifty miles. The steam-boat *America* left the former place a few minutes after six p. m. and reached the latter a few minutes before four the next morning, and stopped twice to take in wood. Without excluding the time thus lost, this boat must have run at a rate exceeding fifteen miles an hour. The river was at this time neither high nor low, but in what the pilots call *good boatable condition*, running most probably between four and five miles an hour. This was the first trip this boat ever made, her engine was new, and a part only of its power was applied. We speak of this boat in preference to others, simply from personal knowledge, and by no means as being the swiftest on the Western waters. We have no doubt she might have been driven through still water twelve miles an hour with perfect ease. An intelligent and observant gentleman informed us, that from point to point, by measurement fifty-four miles, the *Car of Commerce* had run in three hours. He had himself observed the time of starting and of stopping. The captain of the boat could with difficulty be persuaded that he had made such speed, the boat being reputed, though good, not first rate. The distance from New Orleans to Natchez is three hundred and twenty miles by water. Boats have repeatedly ascended against the rapid current from city to city in forty-two hours, nearly eight miles an hour. The precise distance from Louisville to New Orleans we do not know. It is generally computed at fifteen hundred miles. The shortest passage down, which we recollect to have seen noticed, was four days and a half, including stops, of which there are generally two in twenty-four hours, occupying an hour each at least. This will give an average of fifteen miles and nearly one sixth of a mile to an hour. The passage up, we believe, has been made in eight days and thirteen hours. This will give an average of very nearly eight miles an hour; and uniting the speed up and down, we shall find that these boats must have been propelled through the water over eleven miles, on an average. The distance from New York to Providence by water is one hundred and ninety-six miles; from Providence to Boston by land, forty miles. New York papers were lately received in Boston *viâ* Providence, in twenty-two hours. The time occupied by the land carriage, delay at the boat, &c. could not have been less than six hours, leaving sixteen hours for the steam-boat passage, which will thus average twelve miles and a quarter per hour. In all these cases we have our doubts as to the actual distance these boats would have run, through still water, unaided or unimpeded by wind. It is well known in the last instance, that the time of tide on leaving New York, and a favouring or opposing wind, will vary the passage a number of hours. The passages on the Mississippi would seem to afford a fairer criterion for judgment, and so they do. But they are by no means a perfect test, as all will allow, who are acquainted with the Mississippi. It may seem paradoxical, but it is true, that the shortest passages from New Orleans to Natchez and Louisville, are made when the current is strongest, that is, when the river is highest. The reason is, that then there are eddies setting up the river, for miles occasionally, and also that there is many a 'cut-off,' which at this time admits the largest boats, but which, when the river is low, is impassable. All this tends to render us doubtful what is the actual distance our steam-boats accomplish *through the water* in a given time We think the passages between New York and Albany solve this problem much more satisfactorily than those in any other part of our country. Till the last season, the boats on the western waters excelled them. We presume they are now on a par. From New York to Albany by land, it is, we think, one hundred and fifty-three miles, varying but little from the distance by the river; call the latter one hundred and fifty miles. This passage was made repeatedly, in the summer of 1827, within twelve hours, both up and down;

and once, we believe, in eleven hours and a half, including the delay incident to landing passengers. This will give a speed of thirteen miles per hour, without allowing anything for loss of time. We have seen no reason to believe that any steam-boat has fairly gone through the water at a rate beyond this. The average hourly run, in the shortest passages between New York and Liverpool, will vary from eight to nine miles, as the distance is computed from three thousand to thirty-five hundred miles. The most experienced captains have informed us, that they have never been able 'to get out of the best ship' more than twelve or twelve and a half knots an hour.—*North American Review.*

New Method of seasoning Timber.—The seasoning of timber has hitherto been effected by evaporating the sap, or fluid matter, by the action of the warmth and air of the atmosphere, screening the timber, at the same time, from the direct action of the sun, which, by drying it too rapidly, occasions twisting and renting. The time occupied is from three to five years. Mr, Langton, of Jermyn-street, has discovered a method of seasoning timber, by removing part of the atmospheric pressure, and applying artificial heat. Mr. Tredgold, the eminent engineer, has given it as his opinion, that this new process will effect its object most completely in as many weeks as the common process requires years, at an expense not exceeding 10*s.* per load, with the advantage of setting free at least half the capital required by the common method; "of rendering it unnecessary to spoil a good ship, by the use of wood full of its natural sap; and the still greater advantage of rendering the living tree available either for defence, convenience, or common use, in a few weeks after being felled, and in a state in which it may be trusted with safety; while, by the usual method, five years is not more than is necessary, to be equally free of risk from shrinking and decay." A discovery so spoken of by such a man as Mr. Tredgold, is likely to lead to the most important consequences in every department of carpentry. One result will probably be the disappearance of the dry rot.—*Gardener's Magazine.*

Sanative Horse-Brush.—A pamphlet published at Paris by a M. Goetz, recommends a substitute of his invention for the twist of straw commonly used in dressing horses. The brush, which the inventor dignifies with the title of *brosse hygiénique*, is an imitation of the kaffah, or brush of the Arabs. It is composed of a tissue of horse-hair, enfolding a pad of the same material, backed by thin iron plates, and covered with varnished leather. It is, moreover, furnished with a strap across the width of the back as an ordinary brush. The web which covers the pad, which is equally flexible and strong, it is averred, penetrates the hair and to the hide of the animal better than any other instrument, and removes all foreign substances, however minute. The size is the same as that of the usual horse-brush; covers an equal portion of the surface at a time; clears out all the cavities in passing over them, and on this account accelerates the process of dressing. —*Bull Univ.*

Chinese Types.—The moveable Chinese types hitherto employed by Europeans have, we believe, been generally engraved. We hear that the Rev. Mr, Dyer, an English missionary to the Chinese, contemplates casting them in the following manner:—Have the characters wanted first cut on wood: then take a fac simile of the engraved block on clay. Upon the clay cast the type-metal: then saw the characters and dress them to their proper size. We see various objections to this mode, but hope he will overcome all the difficulties, so as to make Chinese types tolerably cheap.—*Canton Register.*

Comparison of Wax and Tallow Lights.—On a comparative experiment on the burning of candles of the same length and of the same weight, com-

posed of the following substances, viz. 1. the wax of Japan, lately brought to Antwerp; 2. white bees'-wax; 3. tallow; 4. a composition of two-thirds wax of Japan and one-third of tallow; 5. a composition of three-fourths of the same wax and one-fourth of bees'-wax, it was found on extinguishing the candles, when reduced to about a fourth of their length, that the remains of those made of wax of Japan, of tallow, and of the compositions of wax and tallow, were of the same length; that the bees'-wax candle was diminished two-ninths less than those before-mentioned; and that the candle, in the formation of which two waxes were united, was of intermediate length. In this experiment the flame of the tallow candle was far more brilliant than that of the others, which, among themselves, were equal in vividness of light, excepting always that into the composition of which there entered a portion of tallow, which was next, although at a wide interval, to the tallow candle.—*Bull. Univ.*

Steam Navigation between France and America.—"It is calculated to excite admiration for the genius of man and of his dominion over the elements," says the Phare du Havre, "to think that two vessels setting out together from the other side of the Atlantic for our shores, sometimes not meeting again until the completion of the voyage,—on other occasions meeting but only to separate,—yet arrive nearly at the same hour, certainly within a day or two, of each other, after a voyage of not more than twenty-five, twenty, and even eighteen days, in the port to which they were both bound." These reflections are occasioned by the arrival, on the same day, in the port of the Havre, of two steam packets from New York. Of these the *Charlemagne*, a superb new steamer, had made the voyage for the first time. It is represented as a magnificent vessel of 450 tons burden, and surpassing in strength and elegance all that had till then been seen at the Havre. The plan and fitting up of the accommodations for the passengers are the objects of astonishment to its French visitors.

Improvement in Church Bells.—Herr Eberbach, of Stuttgard, king's mechanic, at the last distribution of prizes of industry offered by the king of Wirtemburg, received the mechanic's prize of forty ducats and a silver medal, for his invention of steel tongues to tower bells. The improvement effected consists in a more extended range given to the agreeable sound, and the longer duration of the bell.—*Allgemeine Literatur Zeitung.*

Tempering of Steel by Mercury.—M. Altmut, in a recent memoir, details experiments by which he became convinced that the tempering of steel by mercury is the only method by which the metal can be preserved from oxidation.—*Jahrbücher der polyt. Inst. in Wien.*

The Admiralty Buildings at St. Petersburg.—The admiralty of St. Petersburg was founded by Peter the Great. The first vessel that ever came off the stocks there was a brig, of the design of that enterprising monarch, launched in 1706. In 1712 was launched the *Pultowa*, the first fifty gun-ship. Under the reign of the Empress Catherine the edifice founded by Peter was removed, and a stone one erected in its place: since that time the building has undergone various changes, and at length an entire new edifice, for which the naval service of Russia is indebted to the vigilance of the late Emperor Alexander, has been erected, on an enlarged scale, on the site of the former building.

The façade is composed of three divisions, or a centre and two wings. In the centre of the middle division is an archway, which serves for the principal entrance. On each side, on pedestals of granite, is a group of gigantic figures, representing Marine Nymphs, bearing a celestial sphere.

Above the arch is a sculptured bas-relief, and over the bas-relief stand the four statues of Achilles, Ajax, Pyrrhus, and Alexander the Great. Thence commences a tower, the lower part of which is formed by twenty-eight columns of the Ionic order, having the appearance of a gallery. Above the columns, on a cornice, are twenty-eight sculptured figures of Poudojsk stone. Upwards from this cornice the tower assumes the form of a circular column, ending in a cupola, ornamented with three clock dials. Above is a lantern, in which are placed the signals to indicate the elevation of the waters of the Neva *. Thence commences the spire covered with sheets of iron gilt. At the summit is a ship ten feet high, below which is a crown and an apple of three feet and a half in diameter.

New Bridge over the Ticino.—Among the grand works commenced under the auspices of Napoleon, for the convenience and ornament of the Cisalpine departments of his empire, one of the most important was the bridge projected over the Ticino at Boffalora, the point where that river cuts the line of communication between Milan and Turin. This noble work has been terminated at the joint expense of the Austrian and Sardinian governments, and was opened for public accommodation at the beginning of 1828.

The Ticino, which carries off the waters of the Lago Maggiore, or more properly speaking, of a basin, the receptacle of the waters of three thousand square miles of Alpine district, flows through a wide and deep valley nearly fifty miles in length, with the rapid fall of 566 feet, from the little town of Sesto, on the borders of the lake, to the Po. The swellings of the river sometimes rise 12 feet above the usual level, and cover the country to a width from 3000 to 4000 feet. Until the undertaking, of which we are speaking, was completed, the only bridge over the Ticino was that at Pavia, three miles above the junction with the Po, built, towards the end of the fourteenth century, by Giovanni Galeazzo Visconti, the most enterprising prince of his day. The rest of the course of the river, although traversed by several very ancient roads, presented only inconvenient and dangerous ferries, often impracticable. For the service of the road from Turin to Milan, however, as the principal point of communication, a floating bridge was provided, consisting of from twenty to thirty, or even more boats, according to the width of the river in the part where it was moored.

The new stone bridge is situated on the borders of the territory of Boffalora, a little below the bridge of boats, twenty-two miles above that of Pavia, and conveniently enough at about the middle point of the course of the Ticino. It is a fine level construction of massive blocks of granite. The length from abutment to abutment is 997 feet 4 inches, divided into eleven arches each 78 feet 9 inches in span, separated by ten strong piers, 13 feet 1 inch thick. The arches are circular, with a rise of a sixth of the chord, and with a radius of 65 feet 9 inches. The width of the bridge is 32 feet 9 inches, with parapets 1 foot 7 inches in thickness; the serviceable width being 29 feet 6 inches, distributed as follows:—Two foot-pavements, each 2 feet 11 inches wide, and raised above the carriage way 5½ inches: two gutters 1 foot 3 inches wide: a carriage way 20 feet 11 inches, furnished with two double wheel lines of granite.

* This custom was commenced in the time of Catherine II., on occasion of the dreadful inundation of the 10th Sept. 1777. It was then ordered, that, in future, under similar circumstances, discharges of cannon from the admiralty should announce to the inhabitants the approach of danger; and that from the tower in the centre flags should be hoisted during the day, and lights hung during the night, a precaution by which many lives have since, especially on the 7th Nov. 1824, been saved.

At the entrances to the bridge are two rectangular platforms, 65 feet 7 inches long and 57 feet 6 inches wide, under which passes an archway 6 feet 6 inches wide, and 10 feet 10 inches high, for the convenience of those employed in the navigation of the stream. There are besides, at each side, two ample flights of steps 7 feet 2 inches in width, as a direct communication from the plane of the bridge to the banks of the river. It is proposed to erect on the platform, frontier houses for the purposes of the police and customs of the respective states.

The piers have buttresses 8 feet 1 inch high, measured from the upper step of the foundation to the springing of the arch: these foundations go to the depth of 10 feet 2 inches under the buttresses, and acquire by means of set-offs, a width of base of 22 feet 11 inches. The foundations of the abutments are constructed, in like manner, with set-offs, all of them on an ample mass of piling driven to a level, and to 12 feet into the bed of the river.

The piers are furnished on both sides with cut-waters, formed by two equal segments which rise 6 feet 6 inches above the springing including a capping moulded and weathered, of 1 foot 3 inches in height. Over these rise pilasters projecting from the front of the bridge 2 feet 7 inches, and having a breadth of 12 feet 5 inches. The crowning cornice returns round these pilasters, and the parapets rise to a line with them, and also project 2 feet 7 inches from the face of the arches.

Over the abutments there are at each corner of the bridge two grand pedestals, in width, measured transversely with respect to the bridge, 16 feet; and in length 12 feet 5 inches, being the same as the breadth of the pilasters in front of the bridge. On the inner side, the face of these pedestals ranges with the slight projection of the pilasters. The cornice is continued on a perfect level, at the height of 3 feet 3 inches above the underside of the arch at the key-stone. It has a projection of 1 foot 3 inches, and a height of 1 foot 11 inches, and consists of abacus, ovolo, and fillet. It stops at the abutments, after passing round the pedestals, and is succeeded by a plain band along the walls of the platform.

The parapet is quite plain: its height on the outside, above the cornice, is 4 feet, and within, above the footway is 3 feet 9 inches. Above the piers it is broken on the inner side by a protection of 5 inches, in width 12 feet 5 inches corresponding with the pilasters on the exterior. These pilasters, both on the inner and outer side, as well as the pedestals at the corner of the bridge, have as a finish a raised blocking course, in height 4 inches, with a pyramidal weathering, other 4 inches high.

The thickness of the arches at the key-stone is 3 feet 3 inches. Each arch consists of fifty-five arch stones, thus presenting a superficies of massive granite blocks of equal thickness, marked by that number of joint lines at equal distances.

The level of the edifice, with respect to the river, is such that the springing is only subject to be covered 2 feet in the greatest swells, even when these rise to the full increase of 12 feet above the ordinary level. The engineers, under whose direction this work was executed, were the Signor Gianelli on the part of the Austrian government, and the Signor Stefano Melchione on that of the King of Sardinia. The work had already risen under the former government to the height of 3 feet 3 inches above the springing. The designs were furnished by Melchione and the inspector of engineers, Carlo Parea; and have been executed, with some slight variations, as originally projected. The bridge is built, with respect to the internal construction, of pebble stones from the river; but the exterior, as before stated, presents a face of granite blocks so excellently worked, that the whole appears a solid mass: the joints of which are so close as not to admit the introduction of a single hair. The nature of the soil presented many difficul-

ties, the greatest of which arose from the copious springs in the bed of the river.

As an ornamental construction the bridge is highly commended, not less from the fineness of its execution than for the simplicity and grandeur of the general effect.

The expenses of the erection are stated as follows:—

	Italian livres *.
Cost of the works executed between 1809 and 1813, comprising the foundations, the butments, and the piers, to 3 feet 3½ inches above the springings of the arch - - -	2,009,019
The materials brought to the spot previous to the suspension on the change of government, and afterwards used - -	200,000
Expense of completing the work, exclusive of those materials -	800,000
Embankments - - - - -	270,000
Total expense of the work - -	3,279,019

Improvement in Steam Navigation.—In the early part of the month, an interesting series of experiments was made in the river, near Woolwich, on an invention of Lieut. Andrew Skeene, R.N., (one of the companions of Captain Ross and Captain Parry, in their north-west voyages,) for the improvement of steam navigation, by getting rid of the effects of the back water; or, in other words, the loss of power which is occasioned by the wheel on its return, when it is at a certain speed, or when it is immersed below a certain depth, having to lift a large proportion of water. The plan tried in this instance was that of feathering the paddles, which were fixed to a new description of wheel, differing from the common paddle-wheels in allowing each paddle so to move on an axle placed in the centre, as to play freely between the arms and the periphery of the wheel, between which it (the paddle) is restrained by shoulders or projecting portions of it. The result of the trial was, to the extent it was made, very favourable, showing an increase of speed of two and a half minutes per mile. These paddles, it is stated, would have the advantage of working best when immersed one-third of the wheel in water, which would necessarily reduce the size of the paddle-boxes, and consequently the resistance of the vessel to the wind. They are likewise capable of being removed or applied as occasion requires, enabling the vessel to take advantage of fair winds when at sea on long voyages; and they may also be applied in the interior of a vessel for the purpose of war. They are applicable for the purpose of canal navigation, as they possess the advantage of agitating the water much less than the old paddles, not passing it off in the same degree to the shore on each side, but causing it to expand chiefly in the wake of the vessel.—*Daily Papers.*

§ 8. Fine Arts.

Coloured Engravings.—The Biblioteca Italiana, in a recent number, speaks in high terms of the success of the engraver, Stanislaus Stucchi, in giving the effect of oil painting. In copying portraits of Saint Ambrose and Saint Charles (Borromeo), executed after old pictures by the painter Giovanni Poch, the illusion produced by the engraver is represented as so great as to deceive experienced eyes, and even, it is said, to have made the painter himself hesitate in pronouncing which was the print, and which his original picture.(!) The effect of imitation of the strokes, as of a bold and free painter, by the use of a brush by the engraver, is commended as especially happy.

* Twenty-four to the pound sterling.

Improvements in the Process of Lithography.—Lithography was invented by a singer of the theatre of Munich, named Senefelder, but on its first discovery, was too rude to admit the idea of the fine effects of which it has been proved capable. The art was first brought to France by General Lomet,* who had observed it in Germany, while on military service there, in 1806, and who had himself executed lithographic designs, at Passau and Brunnau. He exhibited his specimens to several scientific men and persons attached to the arts, among whom were M. Denon, M. Laudon, M. Gelet de Laumont, and M. Molard, the elder: but war occupied the minds of all men at that period; and the invention lay neglected until M. Engelman of Munich founded his lithographic establishments in Paris in 1814. The following improvements have been recently published, by M. Chevallier, a chemist of note, and M. Langlumé, an experienced lithographer in the practice of the art, in the three important heads; first, the acidulation of the stone; second, the means of obliteration; and third, the retouch.

The new preparation for acidulation is composed of hydrochlorate of lime, obtained by means of the complete saturation of hydrochloric acid, by the powder of white marble. When the dissolution is complete, and it has been sufficiently filtered, gum arabic as white as possible, and well purged of all foreign matter, is dissolved in it. The proportions are as follows—a kilogramme and a half of hydrochloric acid, the quantity of powder of white marble, sufficient for the saturation, and 367 grammes (12 ounces) of gum arabic. To this composition, filtered and limpid, are added 92 grammes (3 ounces) of pure hydrochloric acid; the whole to be bottled and corked. In use, the surface of the stone is acidulated, by being passed over with a brush of badger hair dipped in this mixture. The advantages of the process of acidulation thus performed, are found to be, that the shades, be they feeble or strong, come out equally well; that the stones remain constantly moist by virtue of the liquescent salt which they imbibe; and, far more important than either of these, that the liquid will remove from the stone the spots or stains which it is often impossible to avoid making, while drawing, and which appear on the impressions. The spots disappear on the application of the saline acid liquor.

The second recipe, that for obliteration, consists in passing over the parts which it is sought to efface, with a sponge steeped in a liquid, composed of a demi kilogramme of caustic *(potasse à la chaux)*, dissolved in three times its weight of water; the stone being afterwards washed with water, the design disappears without the slightest alteration having been suffered by the stone. By this process, the whole or any part of the design may be removed, without the least effect on the stone.

Third, in respect to the retouch, the most difficult of all the operations of lithography, of which no satisfactory means had been before applied, the following process is recommended. Two grammes (37 grains) of caustic *(potasse à la chaux)*, to be dissolved in 125 grammes (4 ounces) of pure water. This alcaline liquor poured over the drawing, cleared of the gum which covers it, and remaining on the drawing for a space of from one to five minutes, is sufficient to qualify the drawing on stone, for receiving afresh the lithographic pen.—*Bull. Univ.*

Wilkie's Foreign Paintings.—The subjects of the principal works, the fruits of Mr. Wilkie's visit to Italy and Spain, we understand to beas follow:

Italian.—"The washing the Feet of the male Pilgrims to Rome, in the Anno Santo, by the Cardinals"—ten or twelve figures. "The same office performed for the female Pilgrims, on the same occasion, by the noble Ladies of Rome"—four or five figures. "The Pifferari, or Neapolitan

* In the same, or early in the following year, rude specimens of the art were introduced into this country.

Bagpipers, playing to the Image of the Virgin and Child at Christmas." "The Confession."

The Spanish pieces are of a loftier character. "The Maid of Saragossa:" the Spanish heroine is applying the match to a piece of ordnance, while the wheels of its carriage are held by General Palafox and a monk. "Consultation between Guerillas and Monks." "Guerilla taking leave of a Monk." "Wounded Guerilla."

An opportunity of seeing the Italian pieces, we believe, will be afforded the public at the approaching Exhibition at the British Gallery. The paintings on Spanish subjects are to be reserved for some future occasion.

French and English Members of the Bavarian Academy of Arts.—On the last birth and name day of the King of Bavaria, the 25th August, the Royal Academy of Fine Arts of Munich elected three honorary members from Germany, France, and England, viz. Doctor Sulpitius Boisseree, of Munich, in compliment to his history of German art, deduced from the sepulchral monuments; the Baron Gerard, president of the French Academy of Fine Arts at Paris, for his well known productions in history and portrait painting; and Mr. Robert Cockerell, architect, of London, as a homage to his reputation as an architect, and as discoverer of several ancient monuments; more especially of the Egina marbles, and the Reliefs of Phigalia.—*Allgemeine Literatur Zeitung.*

§ 9. Antiquities.

The City of Aphrodisias (Phrygia).—In the centre of Aphrodisias, now Guera, is to be seen the temple of Venus, of the Ionic order, the greater part still existing. On the left are the theatre and the stadium. There is also an Ionic portico of the greatest elegance. Cupids hold the garlands on the entablature of the portico. The interior frieze of the temple, some fragments of which are in good preservation, are enriched with sculptures representing the Loves hunting every species of animal, and attest that this is really the city of Aphrodite (Venus.) The Greek inscriptions scattered about heighten the interest inspired by the ruins.—*Laborde's Address to the Académie des Inscriptions.*

The Phrygian Hierapolis.—At the site of the ancient Hierapolis (in Phrygia), celebrated by the ancients for its mineral springs, is still to be found the mephitic Cavern noticed by Strabo, into which the birds fell in asphixia. The ruins of the temple of Apollo still exist, and there is also a vast number of magnificent tombs.—*Laborde's Address.*

Antiquities of Ancient Sardis.—The city of Sardis, now called Sart, stands on on elevation overlooking the plain of Hermus: the walls of the ancient city are to be seen on both sides of the Pactolus, an insignificant stream whose waters, even in the time of Strabo, no longer abounded in particles of gold. Two Ionic columns, supporting a grand entablature, are all the remains of the temple of Cybele. The capitals of the columns are extremely elegant; the volutes are adorned with small palms; the shafts rise from the ground to only half their height; but from the diameter it appears that the columns must have been fifty feet in height. On the slope of the opposite hill are to be seen a theatre and a stadium. This celebrated city is no longer inhabited. Some tents of poverty-stricken *Urachi* are alone to be seen on the banks of the Pactolus. And from the summit of the rock of Crœsus, no monuments are to be seen in the country below, except the tombs of the Kings of Lydia. These consist of immense mounds of earth, and are to the number of 60.—That of Alyartes, which Herodotus describes as one of the most imposing mo-

numents which he had seen, after the Pyramids, and which was erected by the courtesans of Sardis, is distinguishable from the rest.—*Laborde's Address.*

Roman Bridge.—On the journey between Nice and the Lake Sabanja (the ancient Sophon), is to be seen, a Roman monument of vast dimensions: this consists of a bridge of six arches with a triumphal arch at its entrance, and at the opposite end a kind of repetition of the arch on the side of the mountain, and opened at both sides for the passage of a Roman road.—*Laborde's Address.*

Unknown Roman City.—At the distance of ten leagues south-east of Cutahia, one of the highest points of Asia Minor, is an ancient Roman city unvisited by modern travellers, and of which, even the ancient Itineraries make no mention. Its principal edifices consist of a large theatre, a stadium, several groups of columns in good preservation, but of no great height, an Ionic temple of the most elegant architecture with columns fluted, and of a single block of marble thirty feet in height: these support an entablature very much enriched and in exquisite taste. From an inscription in the pediment it appears that this temple was restored in the time of Adrian, and dedicated to Apollo. The site is watered by a small stream which passes over a Roman bridge, in excellent preservation, as is the vault, also Roman, to which it leads.—*Laborde's Address.*

Papyrus and Coins at Rome.—Among the recent arrivals of curiosities of antiquity at Rome, are a great roll of papyrus in Egyptian and Greek, of the time of Ptolemy Philadelphus, in the possession of Silvester Guido; eight rolls of Papyrus, of which three are hieroglyphic, three Sacerdotal or Sacred, one Demotic, and one Greek, the property of Demetrius Papandriopoli, with several gold coins, and among the rest, one of Pylæmenes, King of Paphlagonia.—*Beck's Repertorium.*

Discovery of Etruscan Vases.—The Florentine gallery has been lately enriched by the addition of 300 of the most beautiful and elegant Etruscan vases, discovered in a sepulchral vault, casually entered by an inhabitant of Florence, on his farm in the neighbourhood. The Grand Duke purchased the treasure.—*Beck's Rep.*

Opening of a Mummy.—On opening and unfolding a mummy in the collection of M. Passalacqua, at Paris, it was ascertained by a roll of papyrus found within, interpreted by Champollion, that the mummy was 3000 years old, and that the body was that of the daughter of a guardian of the small Temple of Isis, at Thebes. The pupil of the eye was artificial, and of glass.

Interpretation of Hieroglyphics.—The following are the two systems of interpretation of Egyptian hieroglyphics, adopted respectively by Professor Seyfarth, of Berlin, and M. Champollion the younger, of Paris. That they cannot both be right is obvious, and the more each is susceptible of plausible arguments in its favour, the greater, unfortunately, is the probability that both are wrong:—

Seyfarth's System.	*Champollion's System.*
1. The Egyptian inscriptions are generally ALPHABETICAL, the demotic ones more especially.	1. The hieroglyphic inscriptions are generally SYMBOLICAL.
2. The basis of Ægyptian writing is an hieroglyphic alphabet of 25 characters, as Plutarch and Eusebius assert, of which characters three are of the invention of the Priests of Isis, 22 of Phœnician origin.	2. The basis of a Ægyptian writing is a total of about 850 hieroglyphic signs, each of which, when not used symbolically, gives the sound of the name which it is intended to indicate.

3. Ordinarily several signs mark only one WORD.

4. Several signs often signify only one LETTER.

5. Sometimes the same signs mark two or more Letters.

6. The language of the hieroglyphic inscriptions is the ancient Coptic.

3. Generally every sign expresses either a word or an idea.

4. Two or more signs always represent the same number of sounds.

5. The same sign can *never* express any other sound than that with which the sound of the name which it is to represent, commences.

6. The language of the hieroglyphic inscriptions is modern Coptic.

§ 10. General Literature and Education.

Public Libraries of Paris.—According to official documents, the public libraries at Paris, and the number of their contents, are as follows:—The Bibliothèque du Roi contains 300,000 printed books, 100,000 MSS., 120,000 medals, and 1,500,000 copper-plate engravings; the Bibliothèque de Monsieur, 170,000 books, 6000 MSS; the library of Sainte Geneviève 110,000 books, 2000 MSS; the library du Magasin 93,000 books, 4000 MSS.; the Bibliothèque de la Ville 42,000 books; the library of the Institute, 70,000 books; the Cabinet du Roi, 50,000 books. The library of the Cour de Cassation, 30,000 books; that of the School of Medicine, 30,000 books; that of the Chamber of Deputies, 30,000; that of the College Louis le Grand, 30,000; that of the Hôtel des Invalides 25,000; that of the Polytechnic School, 24,000; that of the Tribunal de Première Instance, 20,000. St. Sulpice has a library of 17,000 books; the Minister for Foreign Affairs, 15,000; the Hotel of the Minister of Marine, of 12,000; the Office of Archives of the kingdom, 10,000; the Chamber of Peers, 10,000; the Home Office, 10,000; the Map Depôt, 10,000; the Prefecture of Police, 8000; the Office of Ministre de Justice, 8000; the Central Artillery Depôt, 6000; the School of Music and Declamation, 5000; School of Bridges and Roads, 4000; the office of the War Minister, 4000; the Museum, 3000; The Royal Printing-office, 3000; the Observatory, 3000; the Office of the Minister of Marine, 1500, the Hospital of the Quinze Vingts, 1300; the Foreign Missions, 1200; the Cabinet of the Tuileries, number unknown; the Order of Avocats, number unknown.

Moscow Periodicals.—Since the beginning of the year, three new periodical publications have appeared in Moscow, each twice a month: the Atenei, by Parloff, devoted to scientific literature and biography; the Ruskei, Zretel, the Spectator, by Kalaidowich, for history, antiquities, and general literature; and the Nordische Bulletin, Northern Bulletin.—*Allg. Lit. Zeit.*

Works of Sismondi.—Sismondi has sent to the press his fourth contribution to his history of France, forming the 10th, 11th, and 12th volumes of the entire work. He is at present occupied on a new edition of his Littérature du Midi de l'Europe.—*Blatt. für Lit. Unterhaltung.*

Estimation of the Waverley Novels in Denmark.—Much as Walter Scott is read everywhere, in no country of the globe is the enthusiasm for him carried to so high a pitch, as in Denmark. A single number of the Copenhagen Journal contains the announcement of three different translations of one of his works; and a professor of theology has even gone so far as to recommend to his pupils the study of the Waverley Novels, as the surest

way of attaining that knowledge of mankind, so indispensable in Ministers of the Gospel.—*Blät. für Lit. Unter.*

Translation of the Sagas.—The last number of the 60th volume of the Collection of Northern Sagas, published at Copenhagen by the Arnamaynish Society, contains a translation in Latin of the 'Luxdaela Saga,' an historical, biographical work of 400 pages, of the thirteenth century, on the contests of the Irish and Scotch towards the close of the tenth century. The translator is the librarian Thorleifs Gudmundsun Repp.—*Blätter für Lit. Unter.*

Teutonic Dictionary.—A grand etymological Danish Dictionary by Rasks is announced as highly important to all languages partaking of the Teutonic, and is said to be nearly completed.—It is not confined to the Gothic, but comprises the Slave and Tartar dialects, the Sanscrit, and the ancient Persian.—*Blatter für Lit. Unter.*

Geography of Edrist the Moor.—A complete manuscript of Edrist's geography has been lately found in the Royal Library at Paris. Until this discovery, a fragment only of the great geographical work of this Arab was known. The original is five times the size of this fragment. This celebrated work was written by Edrist in Almeria, where he was born in the 734th year of the Hegira, or 1345 of the Christian era. A translation is preparing in Paris by Jaubert. The original consists of 260 sheets of rude Moorish writing.—*Blatter für Lit. Unter.*

Oriental Manuscripts.—No collection in Europe in quantity and value of Oriental manuscripts, at all equals the Bibliothèque du Roi at Paris. Since 1739, when the last catalogue was printed, the number has been more than doubled. A new catalogue is preparing, with notes, by Silvestre de Sacy, and promises on that account to be the first authority on matters connected with Oriental Literature.

Arabic Manuscripts.—The Asiatic museum of St. Petersburg has purchased the valuable collection of manuscripts of M. Rousseau, the French Consul at Bagdad. The following scarce historical works are amongst its contents: Ahmed Makkari's work on Spain and the Moors; Scherifnameh History of the Kurds, from 1596; Ibn-Khaldun's Historical Prolegnomena, first part very scarce in Europe; Dschauhery's Dictionary of Arabic (Cairo 1253) complete; Tibewaihi's Arabic Grammar and Scaliby's Tikhel-loghut. Besides these, among the works in poetry are Abu-Temmasan's Divan, Dschawidani's Philosophical works, and others on medicine, natural history, and mathematics.—*Blätter für Lit. Unter.*

Chinese Literature.—The Russian Chief Missionary, J. Pitschowinski, who, since the year 1801, has presided over the Russian mission in Pekin, is returned thence, after a fourteen years' sojourn, not only with the acquisition of a thorough and much desired knowledge of the Chinese and Mandschu literature, and the language and manners of the Chinese, but with the possession of a richer treasure in rare manuscripts than any member of the Russian mission since its establishment in 1714. Of the manuscripts in his possession, the most worthy of notice are Tsion-Ten, Chinese annals, 8 vols., hitherto only known in part; a Geography of China with maps, 2 vols., History of Thibet and Tangot, 1 vol., exceedingly scarce; Description of Thibet, 1 vol.; Zungaria and the Lesser Bukharia, 150 years B. C. Description of Peking with plans; Hydraulic works on the Great Canal of China; Mogul Code of Laws; Chinese and Russian Dictionary, 6 vols.; History of Bogdikhans; History of Tchingius under the

four first Kings: Sin Schon, attributed to Confucius; System of the World; Description of Mogul 200 years before Christ, &c.—*Blätter fur Lit. Unter.*

§ 11. Naval and Military Economy.

Spanish Army.—The King is the supreme head of the Spanish army, conveying his orders through the Minister of War. The Infant Don Carlos, the brother of the King, has the title of Generalissimo, but this is merely honorary. The list contains ten Captains General, but there are in reality only six—the Infant Fr. de Paula, another brother of the King, the Infant Don Gabriel, his nephew, the Duke of Wellington, and Viscount Beresford, being *ad honores*. The senior of the others is General Castaños. Of seventy-seven Lieutenants-General, of whom the senior is of the creation of 1802, twenty only served in that rank in the war of independence. The troops of the household consist of six squadrons of Body Guards, of 100 to each squadron, and a company of Halbardiers. Of the Body Guards, four squadrons are Spanish and two Foreign. The foreign squadron, called the Saxons, in honour of the Queen, is composed chiefly of French and Italians, and of very few Germans. The privates have, all, the rank of Sub-lieutenant in the line. The officers rank one step above those of the same title in the line. The Royal Guards are on the same footing as those of France; they consist of two divisions of infantry, one of cavalry, and three companies of artillery, of which one of horse-artillery. The whole amount of the Guard is 15,000 infantry and 3000 cavalry. It may be observed of Spain as of France, that in proportion as the line diminishes, the Guards increase. In 1808, when the Spanish army reckoned 143,000 men, there were scarcely 8000 of the Guard.

The pay for officers is much below what it is in France: that of the common soldier is about the same as the French. In Spain, it is much in arrear, both for officers and privates, and a regiment is relatively well off, if, in the course of the year, it can touch seven or eight months pay. Hence the officers are in a condition of pitiable wretchedness, and the soldiers continually in a state of desertion and mutiny.

The infantry of the line consists of ten regiments of three battalions, seven of light infantry of two battalions; one regiment stationed at Ceuta, where the refuse of the army is sent *en discipline;* and one regiment of Swiss called Wimpfen, which is a mere skeleton—the whole amounting nominally to less than 40,000 men; but in fact, not having at present two-thirds of their strength. The militia consists of forty two regiments of one battalion of eight companies. These, which form beyond contradiction, the élite of the Spanish army, are kept armed and equipped; but except the staff, receive no pay, unless when in actual service. The cavalry of the line consists of thirteen regiments of four squadrons of two companies of sixty men; but they are far from being complete; taken together they do not amount to above 250 men per regiment, all wretchedly mounted.

The artillery is divided into two branches, scientific and practical. The former consists of 422 officers; the latter has 94 officers. The troops consist of six battalions of foot artillery, four companies of horse artillery, and five companies of workmen, five battalions of train and three brigades and fifteen companies fixed in garrison. The regiments of artillery are very feeble, not having two-thirds of their effective strength.

The engineers consist of a corps of officers 138 in number, and a regiment of sappers of two battalions of eight companies, i. e. five of sappers, one of miners, and one of pontonniers.

There are, moreover, 53 companies of veterans and other troops. Besides this force in Continental Spain, there are in America twenty battalions, five squadrons, fourteen companies of foot artillery, three of horse artillery, and two of workmen, with a proportion of officers, and besides five directors, ten

colonels, and a due quantity of inferior officers of engineers. The army is recruited by voluntary enlistment, or drawing in case of insufficiency. The length of service is eight years for the first engagement, and four and two for the following: these give right to an increase of pay.

Previous to the war of independence, no one could arrive at the rank of officer, without having served as cadet; and every cadet was required to prove his nobility. Since the return of Ferdinand, such proofs are no longer required. The third part of the sub-lieutenancies are now given to the sergeants; the other two-thirds to youths from the military college of Segovia, who have passed a satisfactory examination. Above the rank of sub-lieutenant, promotion goes by seniority. The general officers are at the choice of the King. Such is the letter of the law, but it is far from being observed.—The rank and military recompense are the object of pillage. The general uniform of all the standing army and militia, is dark blue ground with distinctions of facings. The six first regiments of light infantry have dark green. The arms are in the most miserable state possible, and are composed of the refuse articles of the different nations of Europe who have fought in the Peninsula, during the seven years war of independence.—*Bull. Univ.*

French Army.—The French effective army, for 1829, is estimated at 232,367, composed as follows:—Gendarmerie, 14,070; Royal Guard, of which 15,364 infantry, and 6444 cavalry, 21,808; infantry of the line, of which 120,500 French and 7896 Swiss, 128,396; cavalry, of which 32,300 of the line, 38,800; artillery, 17,677; engineers, 4885; military equipage, 725; and lastly, the stationary companies, 6006. The total number of officers including general officers, corporals, and brigadiers, 68,518, leaving, for privates, 163,849. The expense of this army is estimated at 169,373,490f. for the pay and maintenance; 1,230,350 expenses of recruiting and courts-martial; and for expenses of central administration, 22,028,000f., making a total of 192,631,840f.—*Bull. Univ.*

Danish Navy.—The Royal Navy of Denmark now consists of three vessels of the line of 84, 66, and 58 guns; of six frigates, of which three of 46, and three of 36 guns; of four corvettes of 20 guns; two brigs, and two schooners; of 77 gun boats; and one steam-vessel; besides one line of battle ship and one corvette on the stocks.—*Journal des Débats.*

Spanish Marine.—The Spanish marine, which in 1808, reckoned 42 ships of the line, 30 frigates, and 160 vessels of lesser bulk, in all 232 sail, has now in being not more than six sail of the line, from 10 to 12 frigates, and 94 vessels of smaller size, with about a dozen frigates, corvettes, and others of inferior class, on the stocks. There is no longer more than one naval department, that of Cadiz: those of Ferrol and Carthagena, as well as that of the Havannah, were suppressed in 1825. The navy is under the command of a Director-General. The administration and the treasure, is entrusted to a junta of General Direction, composed of seven members, exclusive of the President, who is the Director-General. In each of the arsenals of Cadiz, Ferrol, and Carthagena, is a Council, charged with the care of all that is connected with the construction, the repairing, and the arming of vessels, and with the victualling department. The inscription on the naval lists, which are classed as in France, amount nominally to 28,000 men. The whole administration of the navy is subject, of course, to the Minister of State, the Intendant-General of Marine, a Member of the Supreme Council of War, residing at Madrid.—*Bull. Univ.*

Steam Artillery.—In a memoir on the comparison of the mechanical effects of gun-powder and steam, as applied to artillery, a German author, Herr Prechtl, concludes, from a series of analytical deductions, from facts and experiments, that steam-artillery will never offer practical advantages

over powder ordnance, and that it is an invention to be ranked among the number of discoveries more curious than useful or applicable.—*Jahrbücher des Polit. Inst. in Wien.*

Russian Navy.—The quantity of shipping furnished by the stocks of the admiralty at St. Petersburg exceeds that supplied by any other naval arsenal in the empire. It is stated as follows:—From 1712 to 1725, 40 vessels; from 1725 to 1745, 26; from 1745 to 1763, 40; from 1763 to 1797, 93; from 1797 to 1801, 10; from 1801 to 1825, 44. The number of vessels of 100 and of 50 guns, launched previously to 1801, was 72, without reckoning 6084 sail of all sizes. The largest ship produced on those stocks was the *Blagodate* of 130 guns, begun the 29th of February, 1799, and launched the 2d of August, 1800. The material used in the construction of all the vessels is oak of Caucasus.—*Bull Univ.*

Qualities of War-horses.—M. Ammont, Stud-inspector to the king of Prussia, in a pamphlet recently published on the qualities of war-horses, and the proper mode of breaking them, doubts whether the present mode of breaking horses is a good one, and objects to the inefficiency of the system of encouraging races for the end proposed by it. These races can only, he says, have any effect on the fleetness of horses, and consequently, on their quickness on the march, and not at all on their adaptation for useful purposes: to which, on the contrary, they are often disadvantageous. He would substitute chariot races, such as were practised in ancient times by the Greeks and Romans, in order to afford the means of judging at one and the same time of the vigour, the suppleness, and the docility of the animal. —*Bull. Univ.*

State of the Prussian Army.—In the year 1806 the Prussian army amounted to a total of 260,000 men, of whom 7365 were officers below the rank of general the proportion of officers to privates being one to thirty-six, Of the 7365 officers, 184 fell on the field of battle, or died of their wounds, in the campaigns of 1806 and 1807: 10 in 1812: 359 from 1813 to 1815: 2556 have died of natural deaths or left the service. In twenty years the army has lost 1023 officers, somewhat more than a seventh. In 1827 the Prussian army consisted of 122,000 as the peace establishment; but, including the landwehr, amounted to 350,000: of these 6045 were officers on full pay, 3724 officers of the landwehr serving without pay in time of peace: thus the proportion of officers to the line is one in twenty, including the landwehr one in thirty-four. The present constitution of the Prussian army, therefore, is, next to that of the Czar, the most economical in Europe: for to the latter, in an effective footing of 747,000 men, there are only 14,244 officers, or one for fifty-two men. Until 1806 the career of arms, as officers, was closed to all but the nobility; the rest of the nation had access only to one regiment of infantry, to the hussars, and in their particular corps. At that period there were not more than 411 plebian officers in the whole army: of this small number 250 were in the artillery, 27 in the engineers. Thus it seems that the Prussian nobility have ever been little ambitious of the glory arising from deep studies. But since the law of 1808 opened the army to all ranks, the plebeians have flocked to it, and nearly five-twelfths, or 2407 commissions in the standing army, are occupied by men of that class: in the land wehr they are three-fourths, for in 3366 commissions they fill 2569. The infantry and cavalry of the guard have ever been more sought after by the nobility; in the latter, the plebeian class have scarcely one-twentieth; and in the former a little more than one-tenth, of the commissions. In the engineers they have nearly three-fourths—156 to 55: in the artillery they are not more than one-fourth. The lowest ranks are the reward of merit, proved on examination. From the rank of sub-lieutenant to that of general, the advancement of the officers is regulated

by seniority, and it requires more than ordinary desert to form an exception.—*Bull. Univ.*

§ 12. Geography, Statistics, and Public Economy.

Armenia—Erzeroum.—Bordered on the north, west, and south, by groups of precipitous mountains, and only open towards the east, where it descends by a succession of terraces to the plains of Aserbeidsham, the whole of Armenia is an immense massive mountain chain, at an elevation of 7000 feet above the level of the sea, and from its elevation, and no less from its climate, is a truly Alpine country. The heights which immediately belong to the province, although merely second rate hills, are, during the greater part of the year, some of them all the year round, covered with snow: even in the plain the snow remains on the ground from October until March; nevertheless, all travellers agree in representing Armenia as in an excellent state of cultivation and well peopled. Erzeroum, the capital of the Pashalik of that name, which comprises the greater part of ancient Armenia, is situated in a plain twenty miles in circumference, containing not less than sixty villages. On the north the city is commanded by a lofty mountain covered with perpetual snow. It is surrounded by a double wall of stone and deep fosses, and defended, moreover, on the south by a kind of citadel, furnished, according to Kinneir, with twenty pieces of ordnance. The chief strength of the town, however, consists in its abundant population, which, Morier—not without exaggeration—estimates at between 4 and 5000 Armenians, 100 Greek, and 50,000 Turkish families, or about 250,000 Turkish inhabitants. Gamba reckons the population all together at 100,000, of whom 2500 Schismatics, 1600 Catholic Armenians, and 400 Greeks. The habitations are most of them constructed of stone; the roofs flat and covered with soil, so that it is no unfrequent sight to see sheep and calves feeding on them. Even of the bazars, which are filled with all kinds of Eastern wares, a part only have arched rooms: they are for the most part arranged in terraces to which the ascent is by stone steps. Bridges are thrown over the streets which run between the terraces. The city is paved; it possesses sixteen public baths, and above one hundred mosques, which with their leaden domes, countless minarets, and gilded crescents, present in the distance a magnificent spectacle.

Erzeroum is one of the most considerable cities of the Turkish empire, and the emporium of its commerce with Persia and India. The Pashalik is one of the largest, and probably one of the most lucrative, in Turkey. The Pasha, who bears the title of Begler-Bey, levies on all merchandise in its passage through the province 9 per cent. of which a third part goes to his private coffers. Tournefort estimates the revenue levied by the Porte from this province, including the karatsch or poll-tax, which constitutes about half the entire amount, at 600 purses or 300,000 French dollars. The number of Janissaries who were under an especial Janissary Aga, amounted, in the city alone, to 12,000; in the whole pashalik they were more than 50,000. In the last war with Russia a single miserable village of fifty huts furnished, according to Morier, forty armed soldiers.—*Das Ausland.*

Kars.—Kars, six days journey distant from Erzeroum, and three from Erivan, is situated on a stream tributary to the Arpatschai, which forms the boundary between Persian (now Russian), and Turkish, Armenia. The city contains 30,000 inhabitants, Turks, Armenians, Kurds, and Georgians. Surrounded with a quadrilateral wall of the time of Murad III. (1581), and defended by a lofty rocky fort on the bank of the river, it intercepts the road which leads up from Georgia, the valley of the Kur, to the table-land of Armenia.—*Das Ausland.*

State of Crime in France.—The prosecutions in France for all kinds of offences amounted in 1827 altogether to 320,208, as follows:—

1. Before the police—Acquitted	17,689	
Cases in which the tribunal declared itself incompetent	1,783	
Sentenced to pay fine	97,844	
Sentenced to imprisonment	5,699	
		123,015
2. Cases of dismissal of accusation by the Chambres du Conseil—Persons already in arrest	7,540	
Not in arrest	9,348	
		16,888
3. Tried by the Police Correctionnelle—Acquitted	25,980	
Sentenced to fine simply	117,999	
to less than a year's imprisonment	20,976	
to a year and upwards	6,180	
Commanders of prohibited vessels	11	
		171,146

Of this number 16,021 were apprehended before judgment passed, and 394 had obtained their liberty provisionally.

4. Accusations dismissed by the Chambres d'Accusation—		
Apprehended	903	
Not apprehended	482	
		1,385
5. Tried by the Court of Assizes		7,774
		320,208

Nature of the Offences tried by the Courts of Assize in France in 1827.

	Tried.	Acquitted.	Sentenced.
Offences against the person	2,124	973	1,151
against property	5,650	1,741	3,909
Totals	7,774	2,714	5,060

French Council of State.—The French council of state, which has lately been put upon a new footing, is an institution to which in England there is nothing quite corresponding. The French system of administration, professing to adopt two wise principles—unity in excution—deliberation and number in forming a judgment or decision,—provides for the mayor municipal councillors, for the prefect a council-general, and for the ministry a council of state. The appeal from all administrative decisions is made to the king, who decides, having first heard the council of state. The council likewise concurs in the drawing up of laws and ordinances. From it are selected the commissioners who are sent into the chambers to defend the propositions of the crown. There are cases in which the council of state interpose as judges between the government and the subject.

The new Council has been composed as follows:—

Councillors of state in ordinary service	34
Councillors of state in extraordinary service	100
Councillors of state simply honorary	20
Masters of requests in ordinary service	29
Masters of requests in extraordinary service	66
Honorary master of requests	29
Total	278

Times, Paris Letter.

Recent Origin of the Practice of Smuggling in Scotland.—Previous to the year 1793, smuggling, except by a few indviduals, was not practised by the people. So rare and little practised was distillation of any kind, either legal or illegal, till towards the end of the last century, that a man on the estate of Garth got the appellation of "Donald Whisky," because he was a distiller, dealer, and sometimes a smuggler, of that spirit. Had every distiller, dealer, and smuggler, within the last twenty years, been designated by his traffic, no clan could have mustered one-fourth of their number which would not have borne the same designation. The small quantity of grain produced at that period was quite insufficient for the consumption of the country, especially as the glens were more populous than now, and rum, brandy, Hollands, ale, and small beer, were in more general use than whisky, which was considered a vulgar drink. It is a curious fact that until the legal distillation of whisky was prohibited in the Highlands, it was never drunk at gentlemen's tables. "Mountain dew," and such poetic names are of modern invention, since this liquor became fashionable; and when the gentry preferred the native spirit, others followed the example.—*Quar. Jour. of Agri.*

State of Van Diemen's Land.—The communications from Van Diemen's Land notice the great increase of crime there, and many remedies for this evil are suggested; but those we have seen are so crude at present, that an opinion of their efficacy cannot safely be ventured.—In every other respect, this dependency is in a favourable condition, and the advantages that nature has afforded to the inhabitants appear to be judiciously employed. The latest advices allude to their agricultural pursuits being carried on with great activity and judgment, and commercial transactions are now conducted with much more regularity than they were even two or three years since.—It is of great advantage to this colony, in its trading system, to be connected with houses of the first respectability in London.—It has been particularly fortunate in this respect, and is now feeling the benefit of it.

Sandwich Islands.—The intercourse between China and the Sandwich Islands appears to be daily increasing. By the latest advices, 3000 peculs of Sandal wood have just been brought into the Canton market by the Prussian ship Princess Louisa, and further supplies were expected.—The intercourse with this quarter is, at present, particularly valued, as the tumults, in the northern provinces of the Chinese empire, have produced commercial stagnation.—The scarcity of money was very great at the departure of the last advices, which was just before the period for the payment of the government duties; consequently it was severely felt, and it was thought it would produce serious results.

Indigo Crop.—The advices from the indigo districts to the end of July, a period when a fair estimate of the crop may be made, state that it will not exceed 80,000 maunds.—This is certainly a small crop, and it was apprehended that it would be a late one; which is an unfavourable circumstance, inasmuch as the weather becomes bad before the produce is gathered.

Iron Mines in Spain.—The working of the iron mines in Spain has been lately pushed with great activity. The working of the four great mines of Coin, Maribella, Ronda, and Jucar, in the mountains of the coast of Andalusia, has been resumed. The ore found, even on the surface of the soil, yields 82 per cent., and the quality of the iron is represented as equal to that of Sweden.—*Hertha.*

Consumption of Beef in France.—The consumption of beef in France, relatively to the population, is only one-sixth of what it is in England, notwithstanding that, during the year 1826, no fewer than thirty-six thousand five hundred oxen and cows were imported from foreign countries. The

number of horses and colts imported the same year was about 14,000, and that of sheep and lambs upwards 200,000.—*Bull. Univ.*

Commerce of Egypt.—The caravan commerce of Egypt has been greatly diminished by the impulse of late given to traffic by sea. The products of Egypt, exported in 1813, amounted to 6,976,400 piastres. Syria sends every year to Egypt, between 30 and 40 cargoes of tobacco of Latakia, oil, soap, and silk, taking in exchange, rice and coffee; and again bartering these articles in Upper Syria, for cotton and oil. The coasts of Caramania and Anatolia send a great quantity of timber and fuel. The islands of the Archipelago find a market at Alexandria for many thousand quintals of raisins, of which excellent brandy is made; packs in thousands of dry fruit, common Turkey tobacco, copper (a small quantity), nuts of several sorts, opium, mastic, corn, madder, oil, soap, tar, pitch, carpets, oriental stuffs, and other articles of luxury; and among others, gold, silver, and furs, from Odessa, Mosqow, Toula, &c. There are laden in Egypt for the Ottoman provinces, about one million pounds of Moka coffee, three million pounds of rice, numbers of slaves of both sexes; and for Constantinople and the isles of the Archipelago, a great quantity of corn and chicci (a kind of pulse). In 1823, more than 140 vessels laden with grain, were dispatched from the port of Alexandria for the imperial capital and the isles of the Archipelago. The commerce with Europe is the most important of all; and out of 819 merchant vessels, which sailed from Alexandria in 1823, 444 were destined for European ports.—*Bull. Univ.*

Commerce between Egypt and Timbuctoo.—As Mecca may be considered the central point as regards the commerce between India and Egypt, so is Darfour as between Egypt and Timbuctoo. The caravans of the last mentioned place and of the interior of Africa frequent the bazars of Darfour and those of Sennaar: and through the traffic carried on with these places, a number of articles of commerce of Timbuctoo were familiar at Cairo, even before the former of these two places was known to be the capital of an independent empire.—*Bull. Univ.*

Chinese Prejudices.—It should seem that the aristocracy of China are as inveterate against good roads, as some of their European compeers are against good laws.—The strangers residing at the Portuguese settlement of Macao, have been exerting themselves to improve the roads of that district; which measure, the upper class of natives, with true honest zeal for the protection of abuses and the destruction of innovation, have set their faces against.—They tell the parties seeking for the improvement, that they are not aware of any reason for this change. Bad roads have always served them and their fathers; and they conclude the document in which they support bad roads *v.* good ones, with the following piece of aristocratic eloquence—We will resist the attempt, villainous, crafty, cruel, wolfish barbarians from Christendom!

Profits of Smuggling.—The increase in the number of excise officers, and in the heaviness and frequency of the fines against smugglers in Scotland, only served to make the traffic flourish. One James Macniel was summoned to appear before the Excise Court at Weem thirty-two different times, for illegal distillation. He paid twenty-nine fines, in several instances to a high, and apparently to a ruinous amount, considering his means of paying them; and yet he has realised a little fortune, greatly improved his farm, and, with commendable industry, brought barren heaths into cultivation, and conducted the usual rotation of green crops and liming with as much regularity and system as in Mid-Lothian—so profitable was smuggling, when carried on by a man who understood his business, in what the smugglers call the "golden days," when legal distillation was prohibited, and

when Excise Courts were so frequent and fines so severe that three thousand pounds have been assessed in the court-room at Weem in one day. And what may appear more remarkable, every shilling was paid without difficulty from the profits of the traffic which, after a seizure, was resumed with renewed vigour and activity.—*Quar. Jour. of Agri.*

Agricultural Produce of France.—From the inquiries of M. de Chateauneuf into the harvests of France, it appears that the produce of grain throughout France, forty years ago, amounted, on an average, to 14,000,000,000 lbs. which gave to each inhabitant, estimating the population of that time at twenty-five millions, deducting five millions for children under ten years, 583 lbs. of corn a-year, or 1 lb. 9 oz. of bread a day, putting aside 2,333,000 lbs. for seed. That at present, notwithstanding the increase in population by some millions, the produce in grain is only nearly the same as formerly: the official returns stating it at 14,532,000,000 lbs., from which it may be inferred that the lands brought into cultivation since the revolution must have been planted with vines, or laid down as meadows, or tilled for pulse, and even more still for potatoes.—*Le Globe—Mémoire read to the Académie des Sciences.*

French Electors.—In thirty-two millions of inhabitants in France the number of those who have a voice in the election of the members of the Chamber of Deputies, is only 73,000. According to the calculations of M. Charles Dupin, the new generation (those born since the revolution?) reckons 625 electors in a thousand; the old generation only 375, giving 48,116 electors of the first, and 28,869 of the second class. Of the general population the new generation amounts to 28,700,000: the old to only 3,100,000.—*Bull. Univ.*

French Prisons.—The French have their John Howard in the person of a M. Appert, a philanthropist, who has devoted himself to the improvement of the prisons, schools, and charities of his native country, by investigating their management, pointing out their deficiencies, and denouncing the abuses practised in them. For the better fulfilment of his object, he has established a periodical work, now of three years standing, in which he details his proceedings and observations. Some of the numbers, such especially as that which contains the accounts of his visit to Toulon, the second depot of galley slaves in France, is represented as highly interesting. The efforts of M. Appert have not been wholly void of success: his exposures have obtained the attention of the government, and, in some cases, led to the reformation of the system and the correction of the evils complained of.—*Bull. Univ.*

Population of Prague.—In the year 1794 Prague contained 73,780 inhabitants: in the twenty years after that period, during which no account of the population was taken, it increased to 105,915, including 13,691 for Wyssehrad and the garrison. This increase is ascribed to the perfection at which the Austrian institutions have arrived (!), to vaccination, and the number of strangers who flock to Prague. Of the strangers, of the female sex, two thirds are stated to be servants. On a comparison of the composition of the population of Prague with that of Vienna, which amounted to 281,762 in 1825, it is shown that Prague has in proportion nearly double the number of ecclesiastics, half that of nobles, two-fifths more officers of the government, three-fifths more artisans, double the number of foreigners, and a third less married people. The marriages at Prague are the more fertile, giving four births to a marriage: while at Vienna the allowance is three. Separating the Jews from the Christians, it appears, that among the former the increase is 4½ births to a marriage: among the latter 3½. The births at Prague are 21 males to 20 females; but they are reduced to equa-

lity by mortality. The deaths are, in proportion to the population, 1 in 24½ a year: at Vienna they are 1 in 22¼; at Prague the deaths among the Jews are 1 in 26: among the Christians 1 in 22½. In 4100 deaths there are at least fifty of the age of 90, fourteen of 95, nine of 100, and nearly five from 105 to 115. In point of longevity the women have the advantage of two-thirds over the men. It is remarked, that no noble, no rich man, no bachelor, no old maid, had passed the age of 95.—*Bull. Univ.*

Badjazid.—The most recent exploit of the Russian army in Asia, and one of the most important since the breaking out of the war, is the taking of Badjazid, the capital of the Pashalik of the same name. A city of 30,000 inhabitants,—the greater part Turks, esteemed the bravest in Armenia; the rest Armenians, who speak the Turnish language, and who enjoy an equality of laws with the Turks,—lying on the side of a mountain, the summit of which is strongly fortified, itself surrounded with walls and ramparts, Badjazid is, like Kars, one of the most considerable bulwarks of the frontiers of Armenia. South of Kars, which intercepts the road from Tefflis to Erzeroum, and protects the north-eastern side of the plateau of Armenia towards the valley of Kur in Georgia, Badjazid commands the road from Tauris to Erzeroum, and defends Armenia on the side of the valley of the Arras, and the borders of Aserbeidshan. In the northern part of the plain in which Badjazid lies, is to be seen the summit of Ararat, at the foot of which runs the difficult pass through which the Russian troops arrived from Erivan. Here is the district of land which divides the neighbouring stream of Arras and the eastern branch of the Euphrates, which has its source an hour's journey from Badjazid; but which at Diadin, a small walled town, with a fort six hours from Badjazid, is twenty paces wide.—*Das Ausland.*

Liberated Galley-slaves.—The number of persons existing in France who had been liberated from sentences to the gallies, after having undergone their punishment, is estimated at 11,464.—*Bull. Univ.*

Population of Switzerland.—The population of Switzerland amounted in 1827 to 1,978,000 souls, distributed in the several cantons as follows:—Zurich, 218,000; Uri, 13,000; Glaris, 28,000; Soleure, 53,000; Appenzel, 52,500; Argau, 150,000; Vaud, 170,000; Geneva, 52,500; Berne, 350,000; Schwyz, 32,000, Zug, 14,500; Basle, 54,000; S. Gallen, 144,000; Thorgau 81,000; Vallais, 70,000; Lucerne, 146,000; Unterwalde, 24,000; Freibourg 84,000; Schaffhausen, 30,000; Grisons, 88,000; Ticino, 102,000; Neufchatel, 51,000.—*Schweitzerisches Archiv.*

Spanish Revenue.—"Spend half-a-crown out of sixpence a day."—*Old Ballad.*—The following statement of the revenue and expenditure of Spain is the best answer that can be made against the annual attempt of raising the ways and means for that bankrupt state, in the respective money markets of Europe:

	Reals.		*Reals.*
Customs	90,161,526	Diligence of Seville	40,000
Tobacco -	60,193,346	Military substitutes	1,849,309
Salt Works	39,469,787	Medias Analas	882,543
Stamps -	8,257,312	Public-houses -	700,284
Crusada	18,928,438	Cotteries -	8,628,799
Escurado	20,612,151	Fines - -	1,333,929
Noveno -	23,330,192	Ecclesiastical Dues	1,500,000
Terclas -	12,000,000		
Grenada	870,000	Total - -	293,767,316

The real is equal to five sous French, and consequently the Spanish revenue is 73,444,829 francs. Out of this sum there is an army of upwards

of 60,000 men to be maintained, the navy, diplomatists and civil public servants of all descriptions, and the royal family, whose expenses, public and *private*, are enormous, when compared with the national revenue. The *private charities* of Ferdinand are said to amount to 12,000,000 of francs. The expenditure of the Spanish monarchy upon the most moderate computation, amounts annually to 150 millions. Its revenue is 73 millions!

Russian Commerce.—In the year 1825, the exports of Russia in merchandise and silver, amounted in value to 236,351,242 roubles (paper). The importations of the same year were about 195,095,250, paper roubles, leaving a balance in favour of Russia of 41,255,992 paper roubles. In the year 1826, the value of goods exported was not more than about 181,782,254 paper roubles, while the imports amounted to 186,807,152 paper roubles, leaving a balance against Russia of 5,024,893. This great difference between the two years 1825 and 1826, is to be referred to several very natural causes. In the former of the two years, the exchange was so favourable for Russia, that more than eleven and a half millions of specie was imported, a circumstance to which no similar instance has occurred since 1822. The year 1826 was disastrous to Russia, as to every other European state, although, perhaps in a somewhat less degree, on account of the great shock which commerce then sustained.—*Blätter für Lit. Unter.*

Export Trade of Russia.—According to a work recently published in Russia, on the commerce of that country in the year 1826, the Chinese now prefer the cloths of the manufacture of Moscow to those of all other countries. The export of wax and linen cloth to Mexico is constantly on the increase.—A single commercial house at Archangel had eleven vessels at sea.—*Blätter für Lit. Unter.*

M. Balbi's Statistics.—As we noticed in our last number, when treating upon M. Dupin's work of comparative statistics of France and Great Britain, the French greatly surpass us in accuracy of detail in all inquiries of a statistical character, and the press of France is much more prolific in these publications than our own. M. Balbi, emulating M. Dupin, Cæsar Moreau, and others of his indefatigable countrymen, is about to publish a tabular comparison of the French monarchy with other states. We have seen some extracts from this work, and shall avail ourselves of the first opportunity of noticing it fully, when it is completed. The parts we have seen relate to shipping and tonnage, education, and representation. M. Balbi puts the French shipping at 14,530, and the tonnage at 700,000: the English at 18,631, and the tonnage at 2,141,279.

In speaking of education, M. Balbi says, that, in 1805, there was in Prussia one scholar to seven inhabitants. In the Netherlands, one to nine in 1826. In the United States (at New York), one to eleven. In Austria, one to three. In Scotland, in 1821, one to fifteen. In England, one to eleven. In Ireland, one to thirteen. In France, one to seventeen.

The following are the details relative to the representative system in the different states enjoying that form of government. In the representation of France, 74,418 inhabitants elect a Deputy. In the United States (omitting paupers, and territories not incorporated with the Union) 60,129, (slaves are included). In the Netherlands, 55,845. In England, 55,455. In Norway 14,000. By this statement it appears, that in France the number of Deputies is the least, according to the population, and in Norway the largest.

In works of this kind, authors and critics ought to make common cause in furtherance of the essential object, accuracy; and the exertions of the one in compiling should in no degree diminish the vigilance of the other in perusing and remarking upon the details. If elaborate efforts were a passport, we understand that no book might go through the world more free from doubts

than the one in question; but we must still urge M. Balbi to look with caution at his details, and not be satisfied with any other than the strongest evidence of facts. We have not all the documents immediately at hand that would enable us to speak decisively relative to British shipping; but we can assure M. Balbi that, although our data are not sufficiently complete to trace out the error (if there be one), still we are not speaking without due caution, when we hint to him that we think he has under-rated the amount of British shipping and tonnage.—Again, in his notice upon education, we find that he gives to Austria one scholar to three inhabitants; and in Scotland, where education has made most rapid strides, he gives only one scholar to fifteen inhabitants! This requires examination.

Public Credit.—We have two reasons for noticing the conduct of the Bank Directors, upon the failure of Fry and Chapman's; first, because we have recently felt it our duty to remark strongly upon their conduct; and, secondly, because we think that the course pursued by that body on the occasion we have noticed, ought to be recorded as an example to be followed in similar instances. With a promptitude that does them infinite credit, and which is duly appreciated, on the announcement of the failure of Fry's House, the Directors received every bill that was brought to them to be discounted, that with the least attention to their own interest, they could possibly take. This policy restored confidence in a few days.

The Americans and the East India Company.—We are always glad when any event occurs to expose monopoly; although the people of England are tolerably well alive to it now; particularly that exercised over them by the East India Company; which, amongst other acts of "exclusive dealing," compels us to pay an extra million per annum for our tea. Some facts lately known, put this monopoly in its true light. The company carries on its trade through the medium of an association at Canton, called the Hong, and from them the agents of the company make all their purchases and sales.—The Americans, buying through private brokers, were enabled to do their business upon better terms, which was also facilitated by their taking British manufactured goods direct from this country to Canton. The East India Company, perceiving that this system would expose the evil of the monopoly at home, took the alarm, and obtained an order from the Chinese Government forbidding the Americans from carrying on trade at Canton, excepting through the Hong, against which the Americans have bitterly complained.—The East India Company has, however, by reason of its influence with the Chinese Government, succeeded in checking the operations of the Americans, and thereby impeding the sale of the produce of British industry, by preventing the exportation of manufactured goods to China, excepting in conformity with the regulations of its monopoly. We have reason to believe that this exposure has caused great consternation in Leadenhall-street.

Voyage through the Interior of Africa.—At a General Meeting of the Geographical Society of Paris, held on the 5th of December, M. Caillié, the African traveller, after a Report made by a Committee appointed to take his Journal into consideration, received from the President the reward offered by the Society for the person who, by the way of Senegambia, should reach Timbuctoo, and give a description of that place. According to the Report of the Committee, the Journal of M. Caillié contains an uninterrupted itinerary from the Rio Nunez to Tangiers. The traveller had embarked at Jenné, on the Dhioliba, or Niger: he had gone thence by water in one month, in the dry season, when the waters were low. After an abode of some time in that place, and two months and a half spent in crossing the Desert, he arrived in the empire of Marocco, and lastly at Tangiers.

THE JOURNAL OF FACTS.

FEBRUARY, 1829.

§ 1. Natural Philosophy.

Fellows of the Royal Society deceased in 1828.—The Fellows of the Royal Society deceased, in the course of the year, as commemorated by the President at the anniversary meeting, on the 1st of December, were Mr. Archdeacon Cox, biographer; Major Denham, explorer of Africa; the Rev. Alexander Nicoll, regius professor of Hebrew in the University of Oxford; Mr. Wm. Phillips, geologist and mineralogist; Mr. Mills, who had communicated on the wyn dykes, in 1790, and on the basalts of Scotland and Ireland; Dr. John Mervin Nooth, observer of electrical phenomena and chemist; Mr. Planta, antiquarian philologist, secretary to the society from 1776 to 1804; Dr. Sir James Edward Smith, botanist, president of the Linnean society, and purchaser of the Herbarium of Linnæus; Dr. George Pearson, physician and chemist, analyzer of Dr. James's Powders; Professor Woodhouse, mathematician; M. Thunberg of Upsal, botanist (foreign). To these is to be added, Dr. Wollaston, who died subsequently to the anniversary meeting, at which a royal medal was awarded to him for a paper descriptive of the processes and manipulations by which platinum might be rendered available for purposes of practical chemistry.

Fusion of Platinum.—The process pointed out by Dr. Wollaston, for the fusion of platinum, is, instead of alloying, to purify the platinum from every admixture by solution, consolidating its precipitate by pressure, by heating, and by percussion, so as to effect a complete welding of the mass, thus made capable of being rolled into leaf, or drawn into wire of a tenacity intermediate between those of iron and gold. Before the discovery of Dr. Wollaston, the qualities of platinum were withheld from chemists, by its resisting fusion in the most intense heat of our wind furnaces. Alloyed, indeed, with arsenic, it becomes susceptible of receiving ornamental forms; but a continued heat expels the volatile metal, and leaves the other in a state wholly unfit for use. The material has now become not only of high importance to refined chemistry, but is actually employed in the largest manufactories for distilling an article of commerce so abundant and so cheap as sulphuric acid; and has mainly contributed to the producing a new species of glass, which promises to form an epoch in the history of optics.—*Philosophical Magazine.*

Thermometrical Observations.—The subjoined is a table of the variations of the thermometer at different stations in Great Britain, at the period of the sudden transition of temperature in the beginning of November. No. 1. Chiswick;—Horticultural Society's Gardens. No. 2. Earl Spencer's Seat, Althorp, Northamptonshire. 3. Gosport. 4. Penzance. 5. Canaan Cottage, Edinburgh.

	No. 1.		No. 2.		No. 3.		No. 4.		No. 5.	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
Nov. 10	26	40	25	41	32	45	40	45	35	44
11	21	36	21	37	29	42	44	50	26	38
12	29	37	17	41	40	47	44	53	30	43
13	38	56	30	50	49	56	47	55	36	50

New determinations of Longitude.—MM. Arago and de Rossel, in making their report to the French Academy, on the memoir of M. Daussy,

relative to the determination of the longitude of Malta, Milo, and Corfu, highly commend the minute attention with which the calculations had been made, and urge the necessity of a review and a reform in the table of longitudes. The longitudes of the three islands, as given by M. Daussy, in hours, minutes, and seconds, from the meridian of Paris, are as follows:—

Malta,	0h. 48′ 42″
Milo,	1h. 28′ 27″
Corfu,	1h. 10′ 22″

—*Revue Encyclopédique.*

Great Solar Eclipse of 1833.—The solar eclipse which will take place on the 17th July, 1833, according to the calculations of Mr. Innes, made for the Edinburgh Observatory, and communicated to the *Edinburgh New Philosophical Journal*, will be a great eclipse to all parts of Great Britain, and nearly total on the north-west coast of Scotland. The central path of the penumbra will pass near to the south-east coast of Iceland; and the greater part of that island, although the sun is for some weeks above its horizon at that season, will be involved in total darkness. The central path will pass nearer to the equator at other places, according as they are situated farther to the westward.

Formation of the Himmalaya Mountains.—The stupendous chain of the Himmalaya mountains, "an accumulation of sublime peaks, the pinnacles of our globe," says Mr. Calder, is so extensive, that a plane, resting on elevations 21,000 feet, may be stretched in one direction as far as the Hindoo Cosh, for upwards of 1000 miles, above which rise loftier summits, increasing in height to nearly 6000 feet more. Primitive rocks alone have been found to compose all that has yet been explored of the elevated portion of that chain; gneiss being, according to Captain Herbert, the predominating rock, along with granite, mica-schist, hornblende, chlorite-schist, and crystalline limestone. On these repose clay-slate and flinty-slate; and, towards the base, we find sandstone composing the southern steps of the chain, and forming the north-east barrier of the valley of the Jumna and Ganges, by which, and the diluvial plains of Upper Hindoostan, this great zone is separated from the mountain ranges of the peninsula.—*Edinburgh New Philosophical Journal.*

Fossil Turtle.—Another of those interesting productions of nature, the fossil organic remains of a sea turtle, has been discovered, and is now in possession of Mr. Deck of Cambridge. It is imbedded in a mass of septaria, weighing upwards of 150 pounds, with two fine specimens of fossil wood, and exhibits, in a most perfect state, this singular animal of a former world, once undoubtedly an inhabitant of our shores. It was obtained in dredging for cement-stone, about five miles from Harwich, in three fathoms water, and, as a mass of stone, had been used for some time as a stepping-block, from which humble station it was accidentally rescued by its possessor for the admiration of the virtuoso.—*Edinburgh Journal of Science.*

Formation of Amber.—M. Berzelius, the Swedish naturalist, adopts the opinion that amber is of vegetable origin; that, like ordinary resins, it has flowed from vegetables in the state of a balm, and has afterwards acquired hardness gradually. "Amber," he says, "contains *five* substances: i. An odoriferous oil, in small quantity; ii. A yellow resin intimately combined with this oil, dissolving freely in alcohol, ether, and alkalies; very fusible; and resembling ordinary vegetable resins; iii. A resin soluble with difficulty in cold alcohol, more freely in hot alcohol, from which it separates on cooling as a white powder soluble in ether and alkalies. These two resins and the volatile oil, if removed from amber by ether, and then obtained by evaporation of the latter on water, form a natural viscid balm, very odorous, of a clear yellow colour, and which gradually becomes hard, but retaining some odour. There is every reason for supposing this to be precisely the sub-

stance from which amber originates; but at the same time rather poorer in essential oil than at first, and that the insoluble substances in amber have been gradually formed by a spontaneous alteration of this balm, but at the same time have enveloped one part of it, and so preserved it from entire decomposition or change; iv. Succinic acid dissolved with the preceding bodies by ether, alcohol, and alkalies; v. A body insoluble in alcohol, ether, and alkalies, and analogous in some points to the substance found by M. John in gum-lac, and called by him the principle of lac. This is formed in large quantity when a solution of gum-lac in alkali is precipitated by chlorine.—*Annalen der Physik.*

Composition of the Mud of the Nile.—The composition of the deposit from the Nile waters, according to the analysis of M. John, is sand, water, and clay coloured with a little oxide of iron, with a few grains of quartz, and mica, 76 parts; carbonate of lime, 10 parts; carbonate of magnesia, 1 part; oxide of iron, 3 parts; sulphate of lime, 3 parts; extractive soluble in carbonate of potash, 5 parts, with a little extractive soluble in water. The latter substances explain the fertilizing property of this deposit. The specimen analysed was taken from off a wall disinterred at Thebes.

According to M. Regnault, a portion of a deposit from Nile water, taken out of a canal, five hundred toises from the river, and dried in the air, contained 11 parts of water, 6 of carbon, 4 of silica, 4 of carbonate of magnesia, 18 of carbonate of lime, 48 of alumina.—*Journal du Bas Rhin.*

Spontaneous Fire.—The inhabitants of Vieda, a village distant about ten leagues north-east of Madrid, were repeatedly thrown into consternation in the course of the last summer and autumn, by the eruption of spontaneous fires, which broke out from the earth, rising in flames five or six feet in height, and setting fire to whatever briers, stubble, and dry grass it found in its way. The inhabitants, alarmed, had several times extinguished the fire, and thought themselves happy that the phenomenon had not occurred while the harvest was standing. Between the middle of summer and the end of September, these fires had broken out at least thirty times. The cause of this phenomenon has not yet been ascertained; whether the fires are subterraneous or meteoric, is still matter of doubt. The nature of the soil, however, which is burnt and hollow, and the existence of cavernous mountains in the neighbourhood, countenance the former idea.—*Gazeta de Bayona.*

Subterraneous Temperature.—The results of experiments made at the Observatory of Paris, for ascertaining the increase of temperature on proceeding from the surface of the earth towards the interior, and which are the only ones from which a numerical expression of the law which this increase follows, may be deduced with certainty, carry to 51 feet, the depth which corresponds to the increase of 1° Fahr. of subterranean heat. Hence it follows, that the temperature of boiling water would only be 8212 feet, or about one-and-a half miles English, under Paris.—*Edinb. New Phil. Jour.*

Red Snow and Ice.—The Rev. W. Scoresby, F. R. S. L. & E., &c., in an article in the last number of the *Edinburgh New Philosophical Journal*, ascribes the rose-coloured, salmon-coloured, and red snow observed by Captain Parry, in his northern expeditions, to a species of marine animalcules. The reverend gentleman himself had had opportunities of observing in the northern seas similar effects, although varying a little in tint (those observed by him being orange and salmon-coloured,) which he had ascertained to proceed from an animalcule belonging to the class *Radiaires*, and nearly allied to the *Berõe globuleux* of Lamarck. It is about the size of a pin's head, transparent, marked with twelve distinct patches or nebulæ of dots, of a brownish colour. These dots, which appear to give the peculiar

colour to the sea, are disposed in pairs, four pairs, or sixteen pairs alternately, composing one of the nebula. According to Mr. Scoresby the same cause produces the effect of the olive-green sea, common on the coasts of Spitzbergen and Greenland, and which tinges the edges of the masses of ice and snow, against which it washes with an orange-yellow stain. The number of these animals in such olive-coloured sea is immense: a cubic foot is calculated to contain 110,592.

Luminous Sea-weed.—Captain Home, R. N., in a short paper addressed to the *Quarterly Journal of Science*, communicates the discovery that the cause of the brilliant light observed in the sea-weed thrown on the beach at Lancing, on the coast of Sussex, is the animalcule *Sertularia volubilis* of Ellis, described by him in his Corallines and Zoophytes (the *Clytia volubilis* of Lamouroux,) but not mentioned to be luminous. On the 8th of December, and three following days, a great quantity of weed had been thrown up by a hard-blowing south-west wind, so that the beach was covered with it to more than two feet deep in many places. After dark a small quantity was collected of the most brilliant, and this was always found to be that which had been left at the first of the ebb, and was only moist, rather than what had been just washed up. Picking out a single spark, and removing from it every extraneous matter, Captain Home ascertained, by the aid of a microscope, that the light was caused by the insects adhering to the sea-weed. The light would remain sometimes steady for about five seconds, often less, and when it ceased, was renewed by touching it with the finger. In a darkened room, by day, no light whatever was emitted; yet the same weed, kept till the evening, was as brilliant as any that had been found.

Height of Ben Lomond.—Recent barometrical observations, detailed in the *Edinburgh New Philosophical Journal*, gave the height of Ben Lomond above the level of the sea, at 3175 feet. This is the mean of two results; one obtained from observations at the top and bottom of Ben Lomond, and which gave the height of the mountain above the mean rise of half tide at Dumbarton at 3174.2 ft.: the other from a comparison of observations made at the Calton Hill, with those on the top of Ben Lomond, which gave 3176 feet above the level of the sea at Leith. These results, it is remarked, although proceeding from observations made at the distance of 60 miles, differ only two feet from each other, and show the confidence that may be placed in barometrical admeasurements.

Discharge of Water from Loch Lomond.—Mr. Galbraith, in the article above referred to, gives the following results of his experiments to determine the quantity of water annually discharged by the River Leven from the basin of Loch Lomond. From certain admeasurements made by him, Mr. Galbraith found the discharge to be about 59,939 cubic feet per minute. And as 36 cubic feet of fresh water is very nearly equal to a ton, this gives 1665 tons per minute; and, supposing the year to consist of 365 days, 5 hours, 49 minutes, the annual discharge, at that rate, will be 877,925,085 tons. But as the river was rather below its average height, one third may be added to this result; and we have about 1,200,000,000 or twelve hundred millions of tons per annum. As extreme accuracy in such computations, unless made daily throughout the year, is not to be expected, the conclusion can only be looked upon as a tolerably close approximation to the truth.

Sponge Fishery.—In the bottom of the sea which washes the shores of the Cyclades, the common sponge is found in abundance, and forms the principal source whence the inhabitants derive their maintenance, trafficking it with the Turks, among whom it is in great request for cleansing their baths. Sponge-diving is consequently the principal employment of the

population of the Cyclades, and it is said that no young man of the island is permitted to marry, till he can descend with facility to a depth of twenty fathoms. The sea is at all times extremely clear, and the experienced divers are capable of distinguishing from the surface the points to which the animal has attached itself below, when an unpractised eye could but dimly discern the bottom. Each boat is furnished with a large stone attached to a rope, which the diver seizes in his hands on plunging head-foremost from the stern, in order to increase the velocity of his descent through the water, thereby saving an expenditure of breath, as well as to expedite his ascent, being hauled up quickly by his companions when exhausted at the bottom. I have seen but one man who could remain below more than about two minutes, and the process of detaching the sponge was of course very tedious; three, and sometimes four divers descending successively to secure a peculiarly fine specimen.—*Emerson's Letters from the Ægean.*

Velocity of Sound.—The last number of the *Edinburgh New Philosophical Journal* contains a table of the experiments made by Captain Parry and Lieutenant Foster, during the northern expeditions, to ascertain the velocity of sound. These experiments were made at Port Bowen, by means of a brass six-pounder, over a range of 12,892.89 ft. The results given, are the mean of four shots in one case, of five in another, and, in the rest of six shots, by each observer. The table gives the points of the wind, its quality, the heights of the barometer and thermometer. For these we refer to the table, contenting ourselves with the mean results, which varied from 12.″7617 to 11.″7387 and 11.″5311 for the time in which the range of 12,892.89 ft. was traversed by the sound. At the period of the experiment which gave the first of these results, there was a calm; during the second the wind was light; during the third a strong wind was blowing. The velocity per second in feet, was, in the first instance, 1010.28; in the second, 1098.32; in the third, 1118.10. Omitting the last of the ten results (the last above given) on account of the strong wind, the mean of the other nine give a velocity of 1035.19 feet at the temperature of 17.72 Fahrenheit. The mean of a table of velocities formed from observations made at Fort Franklin by Lieut. Kendall, who accompanied Capt. Franklin in his second journey to the shores of the Polar Sea, gives a velocity of 1069.28 feet per second at the temperature of 9.14. Fahrenheit.

§ 2. Natural History.

The Crocodile and Trochilus.—The *Bulletin Universel* of 1828, sect. 2, No. 9, notices a memoir communicated to the *Museum d'Histoire Naturelle*, by M. Geoffroy Saint Hilaire, in justification of the well-known account of the crocodile given by Herodotus, who says, that the throat of this animal is ever lined with Bdella; that he is avoided by all birds, except the Trochilus, which, as often as the crocodile comes on shore, flies towards him, takes up its quarters within his jaws, and relieves him of the Bdella that torment him. M. Geoffroy Saint Hilaire confirms the general fact contained in this account, and relates that there is a little bird, the *Charadrius Ægyptus*, described by Hasselquist, who sometimes enters the mouth of the crocodile, attracted thither by insects, which serve for its nourriture. These insects are a sort of gnat, to which Herodotus elsewhere gives the name of *Conops*, and which frequent the banks of the Nile in myriads. When the crocodile comes to land to repose, he is assailed by their swarms, which get into his mouth in such numbers, that his palate, naturally of a bright yellow colour, appears covered with a blackish brown crust. Then it is that the little plover, who lives on these insects, comes to the aid of the crocodile and relieves him of his assailants; and this without running any risk, as the patient before shut-

ting his mouth takes care, by a preparatory movement, to warn the bird to be off.

The *Crocodilus acutus* of Saint Domingo is, like that of the Nile, exposed to the attacks of small insects called *Maringouins*, and the bird which in that case performs the kind office of the plover is the todier (*Todus viridis*, L.)

That Herodotus, says M. Geoffroy Saint Hilaire, erred in treating the insects alluded to as leeches, there is no doubt, since there are no real leeches in the Nile. The father of history had probably related the fact on the authority of the priests of Memphis.

The Mocking-Bird.—Mr. Rennie, in an article on American song-birds in the January number of the *Magazine of Natural History*, has an interesting account of the mocking-bird, which he says seems to be the prince of all song-birds, being altogether unrivalled in the extent and variety of his vocal powers; and, besides the fulness and melody of his original notes, he has the faculty of imitating the notes of all other birds, from the clear mellow tones of the wood-thrush to the savage scream of the bald eagle. In measure and accents he faithfully follows his originals, while in force and sweetness of expression he greatly improves upon them. His own notes are bold and full, and varied seemingly beyond all limits. They consist of short expressions of two, three, or at most five or six, syllables, generally expressed with great emphasis and rapidity, and continued with undiminished ardour, for half an hour or an hour at a time. While singing he expands his wings and his tail, glistening with white, keeping time to his own music, and the buoyant gaiety of his action is no less fascinating than his song. He often deceives the sportsman, and even birds themselves are sometimes imposed upon by this admirable mimic. In confinement he loses little of the power or energy of his song. He whistles for the dog; Cæsar starts up, wags his tail, and runs to meet his master. He cries like a hurt chicken, and the hen hurries about, with feathers on end, to protect her injured brood. His imitations of the brown thrush are often interrupted by the crowing of cocks; and his exquisite warblings after the blue bird, are mingled with the screaming of swallows, or the cackling of hens. During moonlight, both in the wild and tame state, he sings the whole night long. The hunters, in their night excursions, know that the moon is rising the instant they begin to hear his delightful solo. His natural notes partake of a character similar to those of the brown thrush, but they are more sweet, more expressive, more varied, and uttered with greater rapidity.

Animal Barometer.—At Schwetzingen, in the post-house, says the travelling correspondent of the last-mentioned periodical, we witnessed, for the first time, what we have since seen frequently—an amusing application of zoological knowledge, for the purpose of prognosticating the weather. Two frogs, of the species *Rana arborea*, are kept in a crystal jar, about 18 inches high and 6 inches in diameter, with a depth of three or four inches of water at the bottom, and a small ladder reaching to the top of the jar. On the approach of dry weather, the frogs mount the ladder; but, when moisture is expected, they descend into the water. These animals are of a bright green, and in their wild state here climb the trees in search of insects, and make a peculiar singing noise before rain. In the jar they get no other food than now and then a fly; one of which we were assured, would serve a frog for a week, though it will eat from six to twelve in a day, if it can get them. In catching the flies put alive into the jar the frogs display great adroitness.

Propagation of Fleas—their muscular Strength.—Fleas breed and undergo their metamorphosis in a manner somewhat similar to the silk-worm. A number of eggs being collected from a dog, and put into a pill-box, in a few

days produced hairy caterpillars, which were fed with dead flies, and which the caterpillars ate in a very voracious manner. It was observed, occasionally, that they cast their skins; and in about ten days after their exclusion from the egg, they spun and wove themselves little cases after the manner of silk-worms, in which they remained enclosed in the chrysalis state about nine days, and then came forth perfect fleas, armed with sufficient powers to disturb the rest or even the peace of an Emperor!

The muscular power of the flea is almost beyond belief. Latreille mentions a circumstance of a flea of a moderate size dragging a silver cannon, mounted on wheels, that was twenty-four times its own weight; and which being charged with powder, was fired, without the flea being at all alarmed. Socrates appears to have measured the leap of a flea, and found it extended to two hundred and fifty times its own length; a most astonishing leap! It was as if a man of ordinary stature should be able at once to vault through the air to the distance of a quarter of a mile!—*Technolog. Repository.*

A Spider with ten Eyes.—The last number of the *Repository* just cited, notices as having been seen by the editor, under an opaque microscope, a black spider from Africa, with no less than ten eyes. Of these, four were placed in a square cluster in the front of its head; two on each side of the front, affixed in pairs, on raised appendages; and two large ones were placed behind the head.

The Rhesus Monkey and the Pig-tailed Monkey.—The *Revue Encyclopédique* collects the following notice of these animals from the recently-published *Histoire Naturelle des Mammifères* of M. Geoffroy Saint Hilaire and M. Frederick Cuvier. The Rhesus monkeys are originally from India; it is by them that a great part of the forests of the banks of the Ganges are inhabited. Encouraged by the invincible repugnance of the Indian to kill animals, they advance even into the towns in search of more agreeable food than what they find in the forests. The disposition of these animals is wholly intractable: while young they are capable of a certain degree of domestication, but they very early become mischievous, and age renders them ferocious: as they have great penetration, their mischief is very dangerous. The Pig-tailed monkeys show considerable gentleness and docility while young, but also become mischievous as they grow old. They are natives of Summatra, where they are called *barron*, and where they are employed to mount the trees, especially palm-trees, to gather the fruit. The females are more tractable than the males. One in the Royal Ménagerie at Paris would mount the trees to which she was bound with great agility, and pull off the leaves, but without devouring them. She would very dexterously untie the cord which bound her, and run to visit the houses in the neighbourhood, but always without attempting any harm.

Resemblance of two genera of Monkeys.—M. Fred. Cuvier, before he had seen the *bonnet-chinois* of Buffon, had some doubt as to its relationship with the *toque* of M. Geoffroy de Saint Hilaire. He now regards these animals as two genera of *Macaques*, but more closely allied to each other than any other kinds. Besides long tails, both monkeys have narrow and long visages, bald forehead, and hair at the crown of the head hanging from a centre point; the difference between them exists almost exclusively in the colour of the fur.—*Revue Ency.*

Curious Fragment of a Beech Tree.—The *Magazine of Natural History* for January gives an account of a curious fragment of the trunk of a beech tree, preserved in the Cabinet of Natural History of Metz. The fragment is a portion separated longitudinally from a cross section of a tree, which may have been 18 inches or 2 feet in diameter, and from fifty to sixty years of age. At the age of fifty years, some person had cut in the bark, and

through the liber and alburnum, the form of a cross, about a foot long, and had, by some means or other, blackened or oxidised (or probably the weather might have effected this) the denuded surface which formed the cross. The tree had been felled about ten years afterwards, and happened to be split by the wood-cutter, exactly at the layer where the cross was formed; the fragment now displayed a black cross on the wood or interior side, and a corresponding cross on the bark side of the section, though the two are three inches apart from each other. On counting the layers of wood between the internal and external cross, it appears that the former had remained two or three years uncovered, because two or three layers are lost there; but eight between the inner cross and the bark are very distinct. In the effort of nature to cover the cross, a portion of bark, which had formed the edges of the wound, had been completely enclosed and covered with wood, and still remains sound, but not lignified. This fragment is not described as being particularly important, in a physiological point of view, but as showing that the accretions to a timber tree are added from without, and that bark cannot be changed into wood, any more than the skin of an animal can be turned into flesh.

Extraordinary Fir Trees.—In the Museum of Natural History of Strasburg, is the section of the trunk of a silver fir tree (Abies picea,) called Le grand Sapin de Hochwald, a forest at Barr, in Alsatia. This tree was 150 feet high, with a trunk perfectly straight and free from branches to the height of 50 feet, after which it was forked with the one shoot 100 feet long, and the other somewhat shorter. The diameter of the trunk at the surface of the ground was 8 feet; at 50 feet from the ground, 5 feet; estimated age, 360 years. It was cut down on the 3d of June, 1816, the branches having begun to wither at the top, and the trunk to decay at the centre. There is another silver fir tree standing near where this one stood, nearly of the same height, and estimated to be of the same age. The forest of Hochwald (High-wood, in allusion probably to the height of the trees) consists almost entirely of silver firs, and before the revolution belonged to the town of Strasburg.—*Mag. of Nat. Hist.*

Dragon Flies innocuous.—Nothing can be more absurd, than the fear universally entertained in England of the larger sorts of dragon-flies (Libellulidæ), which are branded with the erroneous name of horse-stingers, though the most superficial examination will demonstrate that these insects have not a shadow of a sting: but their jaws are large and strong; not stronger, however, than those of the Staphylinus, and not dangerous in the slightest degree, even to infants.—*Ib.*

Effect of Climate on Cows.—M. Roulin, in a paper not long since submitted to the French Institute, on the changes undergone by various animals on being transported to South America, says, the cow undergoes a material change. It no longer furnishes the constant supply of milk which we obtain from it by artificial means in Europe, and, in order to obtain that fluid at all, it is necessary that the calf should be continually with its mother. The milk obtained for domestic use is only that which accumulates during the night when the calf is in a quiescent state; when the calf ceases to suck, the milk immediately dries up. The bulls and cows introduced from Europe into South America soon become wild; and, at the present time, it is only by repeated battues that they are kept in subjection.—*Edin. New Phil. Jour.*

Effect of the Climate of South America on Sheep.—The sheep introduced into America were not the merinos, but the two species called tana basta and burda. In temperate climates, they have multiplied abundantly, without showing any tendency to submit to the domination of man. In the burning climate of the plains, they do not propagate freely; and a curious phenom-

menon is there witnessed. The wool of the lambs grows at first, as in more temperate climates, but rather slowly. When in a fit state for shearing, there is nothing remarkable about its quality; and, when removed, it grows again as in temperate climates: but if the proper time for shearing is allowed to go by, the wool becomes thick, falls off in patches, and leaves underneath, not a new growth of wool or a barren place, as if from disease, but a short, shining, and close hair, exactly like the hair of the goat in the same climate; and, where this hair once appears, there is never any return of wool. The goat, notwithstanding its form, which appears adapted to mountainous situations, thrives much better in the low valleys of South America, than on the high points of the Cordilleras. It undergoes a lactiferous change similar to that of the cow.—*Edinb. New Phil. Jour.*

§ 3. Medical Science.

Danger of artificial Inflation of the Lungs.—The practice of artificial inflation of the lungs, as a means of recovery from drowning, has been objected to before the Académie des Sciences, on the strength of experiments made by M. Leroy d'Etortes, on various animals, especially on sheep, which are stated to prove, that the practice is attended with great danger, and that a strong inflation is capable of producing instant death, although some animals are better able to bear the process than others, a dog for instance, than a sheep, on account of the stronger texture of the lungs. The experimentalist infers, that the number of persons restored to life from drowning, is less than it would be, but for the use of inflation as a remedy for their recovery.

Qualities of Glauber and Epsom Salts.—Glauber salts have been considered a more tonic aperient than Epsom salts. This is accounted for by the presence of a little iron in the one, and the absence of it in the other. According to the experiments of Dr. Davy, physician to the forces, (Edin. New Phil. Jour.) out of six different specimens of glauber salts, five were found to contain a small quantity of iron, (probably the sulphate,) and one only to be free from iron. The iron was detected by aqua ammonia, added to the salt in solution; it occasioned a yellowish brown precipitate. Epsom salts may, no doubt, be made a tonic, by the addition of a very minute portion of iron, and particularly of the sulphate.

Ravages of Small-pox at Marseilles—Effects of Vaccination.—The advantages of vaccination are strongly attested by the reports made to the Medical Academy of Marseilles, on the subject of the small-pox contagion, which ravaged Marseilles last spring, and in the beginning of the summer. The contagion attacked both those who had had the small-pox, and those who had been vaccinated; but in the latter cases the disorder presented itself in so mitigated a form, and was so seldom fatal, that the medical men distinguished it by a name expressive of the less degree of its virulence, calling it varioloide. The calculations of the faculty fix the following proportions:—There died—of the whole number of vaccinated, one in 1500; of the number of vaccinated seized with the disorder one in 100; one in 500 of all those who had been inoculated with the small-pox before; of the number of the inoculated with the small-pox, again attacked, one in five; of the not vaccinated, taking the mass, one in eight; of the non-vaccinated attacked by the contagion, one in four. According to a work by M. Robert, physician of the Lazaretto of Marseilles, entitled, Observations sur l'epidémie de Marseille, addressed to the Academy of Sciences, on the 22nd of December, several thousands of persons vaccinated had had the varioloide; of these 45 had died, the greatest number adults and persons who had undergone vaccination regularly.

African Panacea for local pains.—The Malaguetta pepper, a species of the genus *unona*, so well known on the western coast of Africa, is a sovereign remedy, among the natives of that country, for rheumatism, weakness of limbs, headaches, or, in fact, any local pain. It is bruised in water, so as to form a paste, which is rubbed on the part affected; a bandage is added, and the patient is immediately covered with a quantity of clothing. In a short time a very agreeable tingling of the skin commences, which is succeeded by a general glow, and, subsequently, a violent perspiration. Europeans have spoken highly of it, as a remedy, from their own experience.—*Mag. Nat. His.*

Yellow Fever at Gibraltar.—The following are the conclusions as to the malady which has lately desolated Gibraltar, formed by an experienced observer, M. A. Moreau de Jonnes, after examination of its official reports, and addressed to the French Academy of Sciences. First, that when the disorder was at its height, there had perished one in thirty of those attacked, a proportion less, by ten times, than that presented during the great occurrence of the yellow fever at the Antilles: hence the inference, that the virulence of the contagion is much less than in tropical climates. Secondly, that notwithstanding the measures of precaution, to which no objection can be made, but that they were somewhat late; and notwithstanding the perfect state of social order common to European towns, the number of the sick increased six-fold in the space of little more than a fortnight; thus equalling, in rapidity of propagation, the most fatal instances of prevalence of yellow fever which M. Jonnes had ever observed under the torrid zone. Whence the conclusion, that although the yellow fever be less destructive at Gibraltar, than in the part of America within the tropics, its power of transmission is as great in the former as in the latter, and no less rapid.

Extraordinary Trance.—The following curious account is an extract from a paper read before the Cambridge Philosophical Society:—"Sarah Carter, aged 17, the daughter of a farmer at Stapleford, has been afflicted with enlargement of the viscera of the abdomen for two years, the consequence of typhus fever which attacked her whilst nursing her father, who died of that complaint. The swelling of the body does not give the fluctuating sensation produced by water, but its hardness is that of enlargement of the internal organs. During the whole of her illness she has complained very little, owing perhaps to her constitutional indolence of body and mind; as even in the earlier period of the disease she seldom spoke, except when questioned; and she is now without feeling or the power of utterance, lying in a state of perfect insensibility, in which she has remained since the first week in October. During the first fortnight of this insensible state, her head was constantly rolling from side to side upon her pillow, and this action continued night and day without a moment's intermission. In May last, she ate the last solid food, which was a piece of cheese, and for the four following months she took nothing but fruit, which she merely sucked, and water, which she swallowed in very minute quantities. Since the first week in October, it appears that nothing whatever has passed her throat, and her mouth is so firmly locked by the spasmodic contraction of the muscles, that all attempts to open it have failed. It seems that every voluntary muscle of her frame is in the same state of spasmodic action; for when with much force her arms are raised from her chest, on which they are crossed, they can only be elevated a few inches, and recoil instantly to their former position; and so inflexible is her whole person, that when removed from her bed, she is carried like a statue. Nothing has passed the bowels for thirteen weeks, nor has there been any secretion of urine for the same time, every power of the abdominal viscera seeming suspended. The heart, the circulating system, and the organs of breathing, seem unaffected; the pulse, indeed, varies in frequency and strength, and she experiences occasionally an increase of fever.

The pulse does not get weaker, and the colour of the cheeks changes so often, that her mother thinks she is conscious of what is passing in the room. She lies upon her back, a little inclined to the right side. The application of leeches to her temples some time since was followed by a copious discharge of blood, and a few days after her nose bled freely. She had taken no medicines whatever for some months; but on the 10th of November two drops of Croton oil were put upon her tongue by means of a feather, but with no effect. The following day four drops, from a different bottle, were applied in the same way, and in the course of a few hours it occasioned a heaving of the stomach, and an ounce of cheese, in a semi-masticated state, and retaining its odour, was thrown up. For several days the salivary glands secreted copiously, but the mother would not allow a repetition of the oil, the application of galvanism, or, in fact, any medical means whatever. The great peculiarity of this case is, that during so long a state of inanition, the girl has suffered no waste in appearance nor in weight, and that, though the nerves of sensation seem torpid, those subservient to muscular motion appear to have their vigour increased.

Swiss Medical Societies.—There exists at Zurich, a very active medical society, who publish an annual volume of transactions, of which that for 1828 has just appeared. It has invited the societies of the different Cantons of Switzerland to co-operate in the undertaking; the proposition was accepted with eagerness, and for the future the transactions will appear as does the present number, under the title of Transactions of the United Medical Societies of Switzerland.—*Revue Encyclopédique.*

Degree conferred on a Female.—The medical faculty of Marienburg has conferred the degree of M. D. on the widow Boivin, head-nurse and directress of the hospital of the Faubourg St. Denis, at Paris, the authoress of a clever work on midwifery, and other writings.

Prize question on the advantages of comparative Anatomy.—Among the subjects of prize essays proposed by the Dutch Society of Science, of Haarlem, (and which are all given in the last number of the Edinb. New Phil. Jour.) is the following:—What are in general the advantages and illustrations which, since Haller's time, physiology, or the physical history of man, has derived from zoology or comparative anatomy? What are, in particular, the organs of the human body that have been made better known since that period; and what are the functions on which zoology and comparative anatomy have thrown new light?

§ 4. Agriculture and Rural Economy.

Agriculture in Kamtschatka.—The Russian government, in its solicitude for the amelioration of the provinces of the empire, has determined on sending a gardener to Kamtschatka, in order to introduce the advantages of horticulture and agriculture into that country. This gardener is placed under the protection of the Minister of the Interior, and under the immediate orders of the governor of the province. His duty is to introduce the cultivation of grain, pulse, fruit, timber, and the plants generally which belong to domestic and rural economy. He is charged to ascertain those which are capable of becoming naturalized, the climate being less rigorous than is generally supposed. He is also commanded to collect the products of the vegetable kingdom of Kamtschatka, which are as yet little known, although very curious; and to instruct the inhabitants of the country in the art of agriculture and gardening.—*Revue Encyclopédique.*

Destruction of Wheat by Weevils.—A farmer having occasion lately to open a granary containing a great store of wheat, and which had been

looked up for some time, without having been properly attended to, the whole stock of grain, which consisted of upwards of sixteen hundred sacks, had been nearly destroyed by the weevils, the *Curculio granaria*. The appearance which presented itself was that of large patches of black dirt, spread over the whole surface of the wheat. On taking in his hand some of this apparent dirt, the farmer was surprised to find it was composed of myriads of the weevil so destructive to grain. The way in which these insects are produced is as follows:—The female perforates a grain of wheat or barley with the jaws placed at the end of its long proboscis, and deposits a single egg within it; and when the young grub is excluded from the egg, it thus finds provided a fit dwelling, and a store of proper food. The parent insect thus deposits its eggs in five or six grains every day, for several successive days. In about seven days' time the larva is excluded from the egg, and, after feeding its accustomed time, changes into the chrysalis state within the grain, and, in about a fortnight afterwards, comes forth a perfect weevil. The parent insect, after depositing its eggs in situations where there would be a supply of food for the sustenance of its offspring, does not die, but according to Leeuwenhoek, their existence is prolonged during the summer and throughout the winter; and they also feed very voraciously on the interior of the grain, both in the state of the larva and the perfect insect. According to Kirby, a single pair of these insects may, in one year, produce above six thousand descendants. It is recommended to the proprietor of a granary to establish a colony of ants near it; for, as these insects are continually engaged in searching for food, they would soon find their way into the interior of the granary, and feed upon the larva of the weevils.—*Technological Repository.*

The Wolf moth.—A small moth, called the wolf (*tinea granella*) is still more destructive to corn and meal than the weevil. It commits its depredations in the larva state only; the female, after laying its eggs, dies. The number of eggs laid by one of these moths is about seventy; and they are less than a grain of sand in size. The grubs or larva come forth in about sixteen days, and immediately commence their depredations, and form themselves little cases, either from the particles which they gnaw off the corn, or from small portions of the bran, within which they reside, and feed by protruding the head and part of the body from the case; and when they are about to change into the pupa state, they leave these small dwellings, and seek places of safety. They then change into the chrysalis, in which state they remain during the winter; and about April or May come forth the perfect insects. There are two ways of destroying them: one is, when the larva forsake their food and crawl up the walls, which they will sometimes almost cover; the other, when they appear in the moth state. At both these times they may be easily crushed to death against the walls in great numbers, by pressing and rubbing sacks upon them. But they may be exterminated still more effectually, if, after closing up all the doors and windows, the corn-chamber be filled with the fumes of brimstone, by leaving it burning on a pan of charcoal, without giving it any vent for twenty-four hours. Great caution, however, should be used by opening the doors and windows, in order to let all the fumes disperse before any person enters the place, for fear of suffocation. The fumes of sulphur are in no wise hurtful to the corn, nor give it any taste.—*Ib.*

Destruction of Slugs.—The discovery of the means of destroying slugs, by strewing common salt upon them, belongs to Dr. Rousseau, who having thrown a small quantity of that substance on a plank in his garden, covered with those insects, all that came in contact with the salt perished.

Guano, Peruvian Manure.—An interesting memoir has been recently addressed to the Academy of Sciences of Paris, by M. Mariano Rivero, direc-

tor-general of mines, and superintendent of public education in Peru, on the remarkable substance called guano, used for manure in Peru, and other parts of South America. This substance is procured from several islands in the neighbourhood of the coast, and even from parts of the shore itself. Some persons consider it a mineral production, others regard it as an accumulation of excrements of sea-birds. The former opinion is founded on the abundance of the material extracted annually and from time immemorial; its weight and its red colour (oxide of iron), the length of time and number of birds required to produce such vast deposits: on the other hand, the ammoniacal odour which accompanies this substance, the presence of uric, phosphoric, and oxalic acids, that of potass, and the variety of tints it presents, which grow deeper in proportion as it is exposed to the action of the air, are sufficient reasons for attributing to it an animal origin.

The guano is of three sorts, the white, the red, and the brown. The red and brown were extracted for twenty-five years from the isle of Iquique, 400 yards from the port of the same name; but this source being exhausted, it is now chiefly procured from the mountain Pabellón de Pica. It still preserves the name of Guano de Iquique. The white guano is the most active; it is found in all the little islands near the coast, such as Lagarto, Las Animas, La Margarita, the Jesus Isles, those of Brava and Mansa, on the coasts of Cocotea, the Hornillos, and several others. Of the origin of the white guano, there seems to be no doubt. It is deposited on the isles just mentioned, by the sea-birds which rest there during the night, and of which the number is so great, that when they take flight they form a dense cloud of several leagues' extent. From the isles of Ilay and Jesus, to which the birds give the preference, between 1000 and 1500 quintals* of guano are annually procured. The quantity deposited has diminished within the last few years; the birds, whether disturbed by the increasing neighbourhood of man, or from other causes, not having cared to frequent the isles in so great numbers as formerly. The white, red, and brown guanos show, on analysis, the same chemical composition, excepting the absence of sand from the first; as to outward characters, they differ in colour only. This substance is of great importance to Peru, as a manure, especially in volcanic, sandy soils, which by its means are rendered extremely fertile. At Arequipa, a field manured with guano will yield forty-five potatoes to one, being double the produce without such manure, and maize thirty-five to one; while wheat, for which horse manure is used, yields only eighteen to one. The manner of employing this manure by the natives in the mountainous countries, is by placing a handful round the bottom of the stem of each plant; it is necessary to water it the next day, or the plant will be dried up. In the valleys, it is the custom to remove the soil from the stem, taking care, however, to guard the roots; a morsel of guano is then put into the hole, and this is covered up. It is watered within a few hours.

The annual amount of traffic in this article, in the several ports, amounts to about 95,000 quintals annually.

The guano was much in use by the ancient Peruvians, on the territories situated near the coast from Tarapara, to beyond Arequipa. At the period in which the birds came to breed, approach to the islands was forbidden.

Use of Slates in hastening the Ripening of Fruits.—A vine branch had been trained above the window of a house, facing the south, according to the custom in certain parts of France. Beneath this branch was a small slate roof, about three feet wide, serving to shelter a door. It was remarked, that the grapes on this roof were ripe and black, whilst those on the rest of the branch were yet green. This effect, evidently due to the heat accumulated in the slates from the rays of the sun, has been advantageously applied in assisting the ripening of wall-fruit.—*M. Bauchard—Bull. Univ.*

* 220 lbs. to the quintal.

Indian Cress—a new Salad.—Three or four years since, some grains of Indian cress (*erysymbrium indicum*, Linn.) were sent from the Isle of France to the Jardin du Roi, and having multiplied exceedingly, were tried as salad for the table, and have been judged of very favourably, in consequence of their power of yielding salad during the winter.

Indian cress forms small patches on the ground about three inches in diameter: its leaves are very numerous, are irregularly pinnated, have nearly round folioles, and about three lines in width; the flowers are small, white, and disposed in axillary and terminal pannicles; they begin to fade about March.

The qualities which render this cress desirable for cultivation in our gardens, as a salad, are—1st. That it is eminently antiscorbutic and depurative; 2d. That its leaves are more tender and less acrid than those of other cresses, used as salads; 3d. That it does not suffer from the hardest winters; does not require watering to ensure or favour its growth; and will supply leaves during the winter, and especially in spring.

It is necessary that the seeds should be sown in ground in which none have been grown for some years preceding; its culture does not differ essentially from that of the corn salad.—*Ann. de l'Agriculture Franc.*

Swedish Turnips.—At Holbeach Christmas market, Mr. R. B. Hoff exhibited specimens of Swedish turnips, the produce of seed imported from Gottenburgh, weighing from 7lb. to 10lb. each. They were also allowed to be very superior in quality to what have been recently grown in England, and to prove the necessity of more frequently reverting to the parent stock. —*County Chronicle.*

§ 5. Horticulture.

Vegetation of Plants in Moss.—The Calendario Georgico, or Agronomic Annual of the Royal Society of Agriculture of Turin of 1827, contains an article on the vegetation of plants in moss, and a detail of experiments, confirming those of Charles Bonnet, in proof of the possibility of raising delicate plants in moss.

Cultivation of American Shrubs.—In the Grand Ducal Botanic Garden at Carlsruhe, where American trees and shrubs thrive remarkably well, they are not planted in peat earth as in England, but in rotten wood mixed with common garden soil.—*Mag. of Nat. Hist.*

Extraction of Sugar from Water-Melons.—It has been discovered in the state of South Carolina, that a very fine quality of sugar may be extracted from the water-melon, which grows in great perfection there. The landlord of a public-house has shown that all the sugar used in his house during the preceding twelve months, and which had passed as the finest cane, had been obtained from water-melons of his own raising.—*American Papers.*

Barrenness of Fruit Trees.—The Bath and West of England Society have offered a premium of 10*l.* "to the person who in the year 1831 shall give the most satisfactory account of the cause and cure of barrenness in fruit trees, including a practical examination of the opinions and experiments which have been published by Mr. Lyon on the subject of barking trees as a remedy for this defect."—*Cheltenham Jour.*

§ 6. Domestic Economy.

Preservation of Clothes, &c. from Moths.—An account inserted in the *Magazine of Natural History*, of the Strasburg Museum, contains some hints from M. Vinet, the guardian of the museum, on the mode of preserving the articles under his care from moths and worms, which are very generally

applicable. Camphor, pepper, cedar wood, savine, &c. used by some housewives to keep moths from clothes, are perfectly useless if the clothes are not frequently taken out, brushed, and aired; and if clothes are taken out frequently, and brushed and aired, no camphor or other ingredient is necessary to keep them from the moth, or other insects. To convince himself and others of the uselessness of camphor and other nostrums alone, M. Vinet has hatched moths in an atmosphere impregnated with camphor, and the other substances mentioned.

Artificial Incubation by means of hot Mineral Waters.—A resent number of the *Journal des Connaissances Usuelles* gives a favourable account of experiments made by two gentlemen, MM. D'Arcet and Felgeris, in obtaining chickens by means of artificial incubation; the whole process of which is that of placing the eggs, suspended in a basket, in one of the stoves heated by the hot mineral water, and taking care to break them at a proper time: when the places are closed, the whole of the interior will readily acquire a sufficiently elevated and very constant temperature. It is recommended to turn the eggs every day. The experiments were made at Vicly and Chaudes Aigues, and succeeded equally with pigeons and chickens.

New sort of Coffee.—According to a report by M. Pajots Descharmes, on the authority of a person who had constantly made the experiment for twelve years, the seeds of the broom form an excellent substitute for coffee. Being moderately roasted, ground, and prepared in the manner of ordinary coffee, this person finds no difference between it and coffee. It is not the garden but the forest broom, the seeds of which are to be taken for this use. It appears that in that part of Holland bordering upon Germany, this substance has been used instead of coffee for many years.—*Recueil Industriel.*

Recipe for Cedrat Water.—Three kilograms of white sugar are to be dissolved in seven quarts of river water; then add 3½ pints of spirit of cedrat, and 1¾ pints of spirit of citron; make the whole boil for a minute, and filtre it, while hot, through a straining-bag (chausse); receive the liquor into a vessel of earthenware, and change the vessel as soon as it no longer passes clear. When it becomes cold, put it into large bottles, and do not open them until a considerable time afterwards.—*Dict. Tech.*

To make Oil or Cream of Cedrat.—Seven quarts of river water, 1¾ pints of spirit of cedrat, and add as much syrup of sugar as will soften the liqueur to the necessary degree, to give it a clammy consistence; then agitate or stir it well with a spatula, to make the combination perfect, and put it into bottles, which must remain for a considerable length of time unopened. If the liqueur should become a little turbid, it must be filtered through paper, or better through a filter made of fustian, suspended in a funnel of tinned sheet iron, closed by a moveable cover.—*Ib.*

Chinese Food.—With nothing more than a few beans, the meal of rice and corn, and some spices and herbs, the Chinese prepare a variety of savoury dishes. Horse-flesh, rats, and mice, are standard articles of food, and sold publicly at the butcher's. Birds' nests are another article of food; but neither mud nor sticks enter into their composition. The nests are found in the rocks along the coasts of Tonquin, &c., and are built by birds resembling the swallow. They are constructed, as is supposed, of a small species of sea-fish, cemented by a glutinous matter exuding from the bird itself; and when fully formed, resemble the rind of a large candied citron. Bears' paws form another favourite dish. They are rolled in pepper and nutmeg, and dried in the sun. When about to be dressed, they are soaked in rice-water to make them soft, and then boiled in the gravy of a kid, and seasoned with various spices.—*London Weekly Review.*

Method of cleaning Silk, &c.—Substitute for Tapioca.—The following useful recipe is given in the last number of the *Register of Arts*, as a communication from a correspondent:—

Take raw potatoes, wash them, grate them to a pulp over water; pass the liquid through a coarse sieve into another tub of clear water; let the mixture stand until the fine white particles (or starch) are precipitated; then pour off the liquor for use.

Lay the article to be cleaned over a linen cloth upon a table, and with a sponge dipped in the potatoe liquor, wet and rub the article to be cleaned, repeating the affusion till the dirt be loosened; wash the article in clean water repeatedly; then dry and smoothen.

Two middle-sized potatoes are sufficient for a pint of water.

The white powder, or starch, separated from the liquor at the bottom of the tub, after being washed by repeated affusions of water, forms an excellent substitute for tapioca, as a nourishing food with soup or milk. The coarse pulp which does not pass the sieve is of great use in cleaning worsted or woollen curtains, tapestry, carpets, or other coarse goods. The liquor cleans the finer kinds of silk, cotton, and woollen goods, without injury to the texture or colours. It is also useful in cleaning oil paintings, or soiled furniture. Dirty painted wainscotting is also effectually cleaned by wetting a sponge in the liquid and rubbing it with a little fine sand over the wainscot.

Test for Adulteration in Musk.—When musk, in admixture with quicklime, smells of ammonia, it is impure or adulterated. To preserve it well, it should be made perfectly dry, but when it is to be used as a perfume, it should be moistened.—*Edinb. New Phil. Jour.*

§ 7. Mechanical and Useful Arts.

The Great Canal of the Netherlands.—The object of this canal, which is the largest in Europe, is to afford a passage for large vessels from Amsterdam to the sea. This city has 40 feet of water in the road in front of its port; but the Pampas or bar in the Zuyder Zee, 7 miles below, has only a depth of 10 feet; and hence all ships of any considerable burden have to unload part of their cargoes with lighters, before they enter the port. To obviate this inconvenience, the resolution was taken to cut a canal from the town of Helder, the northernmost point of the province of Holland. The distance between these points is 41 English miles, but the length of the canal is 50½. The breadth of the surface of the water is 124½ English feet, the breadth at bottom 36 feet, the depth 20 feet 9 inches. Like the Dutch canals, generally, its level is that of the high tides of the sea, from which it receives its supply of water. The only locks it requires, of course, are two tide-locks at the extremities; but there are, besides, two sluices with floodgates in the intermediate space. It has only eighteen bridges (drawbridges) in its whole length. The locks and sluices are double, that is to say, there are two in the breadth of the canal; and we learn from Mr. Balt, that their construction and workmanship are excellent. They are built of brick for economy, but bands of limestone are interposed at intervals, and these project about an inch beyond the brick, to protect it from abrasion by the sides of the vessels. There is a broad towing-path on each side, and *the canal is wide enough to admit of one frigate passing another.* From the river Ye at Amsterdam, it proceeds north to Purmerend, thence west to Alkmaar lake; thence, north by Alkmaar, to a point within two miles of the coast, near Petten; and it continues to run nearly parallel to the coast from this point to the Helder, where it joins the sea, at the fine harbour of Nieuwediep, formed within the last thirty years. At the latter place there is a powerful steam-engine, for supplying the canal with water during neap tides, and

other purposes. The time spent in tracking vessels from the Helder to Amsterdam, is eighteen hours. The canal was begun in 1819 and finished in 1825. The cost was estimated at 10 or 12 millions of florins, or about one million sterling.—*Register of Arts.*

Use of Zinc for Sheathing Vessels.—A Swedish schooner, the Experiment, which lately put into Plymouth to be repaired, attracted the attention of the scientific, by the example she afforded of the use of zinc for sheathing. The following is the result of the observations made on her:—The zinc sheathing was laid in plates, about six years since, and when the ship was placed in the dock, the bottom was found very foul with barnacles, &c., the zinc brightly polished, in some parts, where the friction of the water prevailed the most; in other parts it had the appearance of old lead. On stripping part of the zinc, to make some necessary repairs, it was found on the surface, pitted or indented, like lead, on which gravel had been trodden, and much reduced, some places being in holes; the barnacles and weeds were principally found about the fastenings, that is the nails which secure the zinc plates to the bottom; and the query now is, whether some metal, like zinc, may not be found for the purpose of fastenings, instead of those used on the Experiment, as it appears obvious, that if that were the case, the weeds and barnacles would not attach themselves to the zinc, from the use of which a great saving would ensue, when compared with copper.

Tunnel in Lancashire.—The canal tunnel, under Standedge, between Manchester and Huddersfield, extends under ground upwards of three miles, and is 220 yards below the surface.—*Register of Arts.*

Art of Dressing Marocco Leather.—The art of dressing marocco leather was brought from the Levant, where it was observed by Granger, an officer in the French navy, and described by him in the year 1735. A manufacture was established in France, towards the middle of the eighteenth century. The true marocco leather is made of goat-skins, tanned and dyed on their outsides. Sheepskins are treated in a similar manner. It seems that this leather is termed *Morocco* leather, from the art of dressing it being originally brought from that country.

The goat skins are not only more pliant, but their surfaces are smoother, and they are likewise more durable than those of sheep, but their employment is restricted, on account of their high price.—*Dictionnaire Technologique.*

Iron Trellis-work in Savoy.—The attention of the Academic Society of Savoy has been called to a new invention for iron trellis-work, by M. Parthod, one of the most ingenious mechanics of that country. The work was applauded by the Society, but the author was recommended to execute a specimen on a larger scale, in order that a more decided opinion might be pronounced on the merit of his invention.—*Revue Enc.*

Immense Block of Stone.—A stone has been lately dug out of the Craigleith quarry, 146 feet long, which is 46 feet longer than the shaft of Pompey's pillar at Alexandria, and ten times heavier than the famous block of granite which forms the pedestal of Peter the Great's statue at St. Petersburgh; it must even exceed in weight the enormous Boulder-stone of Borrowdaile, in Cumberland, which has long borne the credit of being the largest detached stone in the world. An extended continuity of the stratum, of the same exact level, at the place where the operations of the workmen were going forward, and a perpendicular fissure within the bed made it easy to detach this unrivalled extent of stone from the adjacent masses. Being designed for no particular purpose, it must be broken up to supply the ordinary demand from the quarry, unless the citizens of Edinburgh snatch this

opportunity of adorning their city with a column, such as no capital in ancient or modern times has yet been able to boast of.—*Register of Arts.*

Bridges at Gloucester and Chester.—A stone bridge of a single arch has been erected across the Severn, at Over, near Gloucester. It is built of sandstone, from the forest of Dean. The width is about 27 feet, including the parapets, with two foot-paths. The roadway is supported upon walls between the spandrils, similar to Waterloo bridge, and covered with slabs of stone.

	Feet.
Span	150
Radius of the Segment	246½
Rise	35

A stone bridge of a single arch, of much wider span, is in course of erection near Chester.—*Companion to the Almanac.*

New Church at Egina.—The first stone of a new church has been laid at Egina, on which is the following inscription:—'In the name of the Hellenic nation, the President of Greece consecrated this temple to God, the deliverer of Greece.'

Exhibition of Bohemian Manufactures.—The first public exhibition of Bohemian manufactures was made last year at Prague. It was opened before the end of September, in the Redoutensaal or public ball-room of the city, and excited very general interest. Several branches of art are noted as exhibiting more than ordinary merit. Among the articles of porcelain is mentioned a vase from the factory of Lippers and Haaschen, in Schlaggenwald, white, and richly gilded, and representing, in Indian ink manner, the picture of the woman taken in adultery, existing in the Imperial gallery. The ironwares of Korzowitz, are also highly spoken of, and are averred to equal the productions of Berlin in the same kind. They consisted of statues, busts, bas-reliefs, vases, crucifixes, candelabras, &c. The mechanician, F. Speten, exhibited an universal equatorial, with circular movements, after the invention of the deceased engineer, Bretschneider. Among the works of mere curiosity, a part of a model on pasteboard, of the whole city of Prague, by an officer of the public library, Herr Langweil, drew much attention. —*Abend Zeitung.*

Steam Engines in Cornwall.—The last number of the *Edinburgh Journal of Science* gives the following statement of the steam-engines employed by the mines in Cornwall, and the number of millions of pounds lifted one foot high, by the combustion of one bushel of coal to each.

In 1823 there were 55 engines at work in Cornwall, performing on an average 26,9 millions.

1824	57	28
1825	62	28,97
1826	63	28,36
1827	62	31,9
1828	60	34,85

Method of Polishing Stones.—The Hindoos polish all kinds of stones by means of powdered corundum, mixed with melted lac. The mixture being allowed to cool, is shaped into oblong pieces, of three or four inches in length. The stone is polished by being sprinkled with water, and at the same time rubbed with these oblong masses; and the polish is increased by masses being used successively with finer grain.—*Ed n. New Phil. Journal.*

The Norwich and Lowestoff Navigation is one of the most interesting public works in progress of execution, connected with the navigation of this country.

As the objects contemplated by the undertaking are important both in a

nautical and commercial point of view, and as the means by which they are to be effected are new and uncommon in England, as a work of civil engineering, we subjoin a brief account of the origin and progress of this interesting experiment.

The water communication between Norwich and the sea is, at present, confined the river Yare, which running from Norwich to Yarmouth, a distance of about 30 miles, discharges itself into the sea at that place. This river is navigated by wherries of from 20 to 40 tons burden, employed in carrying corn, flour, and goods, from Norwich to Yarmouth, and in bringing back coals and goods from Yarmouth to Norwich. It is of course necessary that all these goods should be trans-shipped at Yarmouth, those exported from Norwich being, on their arrival at Yarmouth, shipped on board sea-borne vessels; and those imported being, on their arrival at Yarmouth, taken up by the wherries.

About 300,000 quarters of corn and 50,000 sacks of flour are annually conveyed down the river to Yarmouth, and about 60,000 chaldrons of coals and 20,000 tons of goods are brought up the river from Yarmouth every year.

Upwards of a moiety of the whole imports and exports to and from Yarmouth belong to Norwich. The river is without a lock in its whole course and is generally of sufficient width and depth to admit of sea-borne vessels but it passes, just before its arrival at Yarmouth, over a long and shallow lake called Breydon, where the vessels now used often find it difficult to get over. The embouchure of the river into the sea is frequently blocked up by shifting sands, and this is almost invariably the case when the wind blows from the east.

This bar is continually occasioning the most serious delays to commerce, as vessels are not unfrequently detained at Yarmouth, a fortnight before they can get out of the river.

The act for improving this Navigation was passed in 1827. The plan proposed is to render the river Yare navigable for sea-borne vessels, from Norwich to a place about twenty miles down the river called Reedham Ferry,—to open a new cut at that place, across the marshes, about two miles and a half long, so as to join the river Yare with the river Waveney, near St. Olave's Bridge—and proceeding along that river and up a stream called Oulton Dyke, to a small lake called Oulton Broad, to deepen and widen the two latter,—and, proceeding through the adjoining lake, Lothing, to make a passage from it to the sea, which passage will be about 700 yards long and 40 wide.

These works, which are under the direction of Mr. Cubitt, have been rapidly proceeding during the present year. The double ship locks at Swing Bridge, at Mutford Bridge, and at the upper end of lake Lothing, were completed and opened in due form by the directors of the company, on the 5th of November last, and at an expense within the amount originally estimated by the engineer. This part of the works forms the stop or barrier, between the sea water of the proposed harbour of lake Lothing, and the rivers and inland waters of the country; and the lock is made double, or with two pair of gates pointing each way both landward and seaward, so that vessels may pass the lock at all times, or with the head of water on either side the gates.

The works now in progress are principally preparatory to making the extreme cut between the sea and lake Lothing, and for building the great mooring sluice and lock at the entrance, which is to serve the purpose of occasionally retaining the contents of the harbour (about 200 acres) at the level of high water, and by suddenly discharging the same at low water, to clear and keep open a passage to a depth of 10 to 12 feet below low water of the sea. The sluice is to be 50 feet in clear width, and 24 feet deep, for the course of the effluent water, which is sufficient for the passage of the

largest steam-vessels hitherto constructed; and this entrance sluice is to be so constructed as to form a lock for vessels into and out of the harbour during the time of ebb tide, or when the sluice is set for retaining a harbour, or reservoir of water. A large swing bridge is also to be erected across the sea end of the sluice, in a line with the present turnpike road from Yarmouth and Lowestoff to London. It is expected that this part of the works will be completed in 1829. It will be the first and only artificial harbour in the kingdom; and from this artificial harbour will extend a ship navigation inland in two branches, one of 30 and another of 20 miles in extent, without a single lock on either.—*Companion to the Almanac.*

Eriometre, or Wool-measurer.—M. Skiadan, land-proprietor in the province of Noronege (Russia), has lately invented an instrument, the *eriometre*, for the measurement of bodies so small as to be scarcely visible. It measures the ten thousandth part of an inch. The inventor has already used it in several experiments, in which the aid of the microscope would have given merely approximative results; and by it he has ascertained that the thread of the spider's web is thicker than gold leaf. The *Revue Encyclopédique*, in expressing an opinion on the invention, says it appears to be free from the disadvantages to be objected against all instruments that have been hitherto used for the same purpose. The measurement it seems is effected with astonishing promptitude, and the nicest exactness, without fatiguing the sight. The measure is divided into one hundred thousandth parts of an English inch. By the assistance of the eriometre, the breeders of sheep who desire to improve their stock, may choose, by the fineness of their wool, the best rams to breed from; they may even ascertain the different degrees of fineness of the wool, in different parts of the body of the animal, or if a single hair be of the same diameter throughout its whole length.

§ 8. Fine Arts.

Commemoration of Grétry.—The city of Liege having contended with success against the city of Paris before the French tribunals, for the possession of the heart of the famous musical composer Grétry, who was a native of the former town, celebrated their victory by a solemn public fête in the beginning of September. The festival commenced on the 7th, on the arrival of the commissioners of Liege, who had brought the heart from Paris, enclosed in a casket of gold, and lasted three days. Meyerbeer, who happened to be at Spa, went to Liege to be present at the rejoicings; and, being recognized, was treated with marked distinction by the Grétry Society and the municipal authorities. At the theatre, in the evening of the last day, on the conclusion of the concert, the director of the fête stood forward and announced to the public the unexpected presence of the living composer, and that the orchestra, in compliment to him, was about to execute the overture to *La Fausse Agnès*. The announcement was received with great applause; and, at the conclusion, the house resounded with acclamations complimentary to the author. On the 21st of September, after the return of Meyerbeer to Spa, a deputation of the Grétry Society of Liege waited on him, and presented him with a diploma as honorary member of their society. The fête excited the general interest of the inhabitants of the town, and attracted several thousand strangers.—*Abend Zeitung.*

New Landscapes by Turner.—Mr. Turner has finished six splendid landscapes at Rome. By our latest correspondence we learn that he was about to follow the usual custom of submitting his works to the inspection of his brother artists of all countries, assembled in the metropolis of the arts. That exhibition over, he would set out on his return to England. Doubts

were felt whether the dashing manner of the English Pacsista would meet with that degree of applause from the artists of Rome, which his works never fail to receive from his own countrymen at home.

Foreign Members of the Nuremberg Academy of Fine Arts.—In the last number of the *London Magazine*, we announced, from the *Algemeine Literatur Zeitung*, the election of our countryman, Mr. R. Cockerell, as honorary member of the Academy of Arts at Munich. By a subsequent number of the journal it appears that, on the same occasion, the birth-day of the King of Bavaria, the same gentleman, and also M. Boissère and the Baron Gerard, were elected members of the Academy of the Fine Arts at Nuremberg.

§ 9. Antiquities.

Ancient Constructions in America.—A remarkable work of the ancient Americans, existing near Newark is thus described by a German miner, Frederick Assall, who has lately published a work on the ancient inhabitants of North America and their monuments.

First is seen a circular erection, with a mound of earth thirty feet high inclosing a court of twenty acres. This court communicates by an open way to a second place of twenty acres, surrounded by a rampart of earth ten feet high. Very long parallel walls extend thence to an octagon inclosure of forty acres, having four entrances, through one of which is a communication to a fourth place, in the form of a circle. Two parallel walls stretch thence for thirty miles, but have not yet been examined. All opinions agree in regarding these works as military.

The monuments near Marietta are better preserved than those at Newark, and display much ingenuity. On a high plain is situated the great square commonly called *The City*, with an inclosure of 40 acres, and surrounded by walls ten feet high, and from thirty to thirty-six feet wide at the base. On every side are three openings, making all together 12 ascents; within are still to be seen several smaller works. By the side of this large square is another of smaller dimensions, also in a good state of preservation, and other buildings. Outside of the large square is to be found a considerable quantity of earthern vases, reeded on the outside, and glazed within. It appears that they were vessels purposely thrown away. Nothing further has been discovered.

Ancient Fort of Circleville.—Among the ancient monuments, the most regular in construction is the Fort near Circleville, 26 miles south-east of Columbus. Here stand, on elevated ground on the east bank of the Scioto, two forts, of which one has the form of a perfect circle, the other that of a square. Each is surrounded by two high walls, with a ditch between them; they are now separated by the road which leads from Columbus to Chillicothe. Between them there formerly stood a hill, which has been removed, the materials of which have served for the building of the new city of Circleville. The square forts measured fifty-five yards square, and in the middle of each side, as well as at the corners, were openings, protected by hillocks standing before them. These walls are some degrees out of the line of the meridian, but not more nor less than the variation of the needle, whence it has been inferred that the ancient Americans were acquainted with the magnet. They must certainly have possessed a knowledge of geometry, or they could never have given to these works the precision and exactness for which they excite so much wonder.

The objects found among these monuments are additional proofs that these cannot have been the work of Europeans. Among them a pipe bowl, with a beautiful female countenance, formed from a piece of Chinese talc,

was once discovered. In excavating a grave, mummies, it is notorious, have often been found and described.

Aspect of Persepolis.—At Persepolis there is no great temple as at Thebes, at Palmyra, or at Baalbeck, sufficiently predominant over all surrounding objects, to attract the chief attention, and furnish of itself sufficient matter for description and admiration. Here all is in broken and detached fragments, extremely numerous and each worthy attention, but so scattered and disjointed as to give no perfect idea of the whole. Its principal feature is, that it presents an assemblage of tall, slender, and isolated pillars, and separate doorways and sanctuaries, spread over a large platform, elevated, like a fortification, from the level of the surrounding plain, the effect of which is increased by the mountains in the distance.

The great mass of the ruins is on a higher platform, above the first. At the sides of the steps ascending to this are sculptured processions, sacrifices, &c. of which Niebuhr has given tolerably faithful drawings. They are all admirably executed, and bear a striking resemblance to similar processions at Thebes and Edfou, in Egypt. Among other resemblances are those of trees, placed to divide men who are near ascending steps, beasts of sacrifice, offerings of meat, cars and horses, armed men, &c. All these sculptures are particularly fine, though part of them are now buried, and other parts broken; and even the portions least injured are discoloured by a thin moss grown over the surface. Horizontal lines of open flowers, like the rose or lotus, are in some cases seen dividing the compartments, which is also an Egyptian device.

This portion of the ruins seems to have been a grand open portico, consisting of many rows of columns, supporting only architraves; and below them are oblong blocks, as if for pedestals of sphynxes. The several columns erect are all fluted: some of them being of the same design as those already described; and others, the capitals of which appear to be gone, being much higher in proportion to their diameter.—*Buckingham's Travels in Persia.*

Sanctuaries of Persepolis.—On one of the platforms on which the ruins of Persepolis stand is seen an assemblage of different sanctuaries, which are quite Egyptian in their style. The first of these that we entered was a square of about thirty feet, having two doors on the north, one on the south, two on the west, and one on the east. These are perfectly Egyptian in every respect, as may be seen from the drawings of those that exist: they are composed of three pieces—two portals and an architrave, and above this the cornice. Their inner surfaces are sculptured with designs representing the sacrifices of beasts. The priests have umbrellas held over them as in India, and the guards are armed with spears. Between the doors are monoliths, like those used in Egypt, for keeping the sacred animals, and about the same size. Around these were inscriptions of the arrow-headed character. The gates were closed, not by doors, but by bars only, of which the sills still remain; but both the open and closed monoliths, the first being like mere window-frames, had each folding-doors of metal, as the holes for the pivots, both above and below, were too small to afford sufficient strength to stone. Some of these monoliths are quite perfect, and might be easily brought to the British Museum, by way of Bushire. Each of them were highly polished, and one, especially, appeared to us to give out as clear a reflection as the finest mirror of glass. It is on these monoliths that the Arabic, Coptic, and Persian inscriptions are deeply cut, and that with so much care as to have required days or weeks in the execution. The proportions of the doors are extremely massive; and their passages are so narrow, as not to admit of two persons passing each other

commodiously. They are all of black stone, slightly veined with quartz, and close-grained.

The largest sanctuary of all is exactly similar to the others in design. The inner portals of the great gate to the west are particularly fine. There are seen five or six rows of warriors, with spears, shields, arrows, quivers, and helmets or dresses of different forms. A priest sits in a chair above, and holds a lotus flower in one hand and a long staff in the other, while his foot is placed on a footstool. Before him are two altars of fire, with extinguishers fastened by chains; a man with a round helmet and a short sword addresses the priest; and behind him a female is seen bringing in some offering in a small basket. Above this are a curtain of network and two friezes of the winged globe in the centre, with three lions on each side guarding it; the two divisions are separated by lilies of open flowers. All the male figures were bearded; but they have been wantonly disfigured in this part, probably by bigoted Moslems, who consider every representation of living beings as a breach of the commandment.

The designs of the other gates of this sanctuary represent a priest stabbing a unicorn, and a chief sitting on a chair supported on a throne. Both the winged globe and the lotus are frequently seen, and the whole work is Egyptian in its style. Neither the doors nor the recesses of this sanctuary ever seem to have been closed, as there are no marks of hinges anywhere; nor does it appear to have been ever roofed, though there are fragments of fluted columns lying in the middle.—*Ibid.*

Discovery of ancient Bronze Statue of Minerva.—A fine statue in ancient bronze of Minerva Pallas has been recently found at Voghera, in the kingdom of Sardinia. The figure is in the attitude of a goddess bearing a something, now lost, an owl, or a victory, on the palm of the right hand. The left arm hangs down in repose; the figure rests with dignity on one leg, the other being slightly bent. The form is slight, and such as the Greeks give to Minerva. She has the garment without sleeves, descending to the feet, the *colocusie* of the ancients. The breast is covered with the ægis, with the head of Medusa in the centre, entwined with serpents, skilfully executed. On the head is a helmet, surmounted with a hair crest of exquisite workmanship.—*Furet de Londres.*

Antiquity of Chimnies.—If the houses of the ancient Romans had been furnished with chimnies, Vitruvius would not have failed to have given a description of their construction. Yet not a word about them is to be found in his works. Nor does Julius Pollux, who made a collection of the Greek names of all the parts of habitations, give a word for them any more than Grapaldus, who in more modern times formed a vocabulary of all the Latin words used in architecture. That there were no chimnies in the 11th, 12th, and 13th century, seems proved by the curfew, couvre feu, of the English and Normans. In the lower ages the fire was made in a sort of stove, which the law required should be covered up on retiring to bed. The most ancient allusion extant as made to chimnies, is not earlier than the year 1347, a period at which an earthquake, which threw down a great many, happened at Venice. De Gatans, in his History of Padua, says, that Francesco da Carrara, governor of Padua, on going to Rome in 1368, and not finding a chimney in the hotel in which he lodged, was obliged to have some built by masons and carpenters whom he had sent after him. These were the first erected in that city, and the arms of the Signor of Padua were affixed to them, to commemorate the great event.—*Furet de Londres.*

Hindoo Architecture.—The ancient Hindoo temples at Anagoondy, now partly in ruins, are built of grey granite, or rather syenite. The massive and

gloomy style of architecture which characterises all Hindoo buildings, is also met with here; but in one instance, it has, to a certain degree, been departed from; for, in one of the principal buildings, there is an extensive colonnade, the columns of which are light, with small pedestals and capitals, and approaching somewhat in their proportions to the Grecian. Some of the pillars are tastefully carved with flowers. A few are in the form of Caryatides.—They support immense slabs of granite, which are carved on their under surface, so as to form an ornamental roof. The largest of these slabs, which are in the central part of the building, are at least thirty feet long.—*Edin. New Phil. Jour.*

Interpretation of Hieroglyphics.—M. Champollion, jun. on his road to Toulon to embark for Egypt, stopped two days at Aix, with M. Sallier, and examined ten or twelve Egyptian papyri, which had been purchased some years ago, with other antiquities, from an Egyptian sailor. They were principally prayers or rituals which had been deposited with mummies; but there was also the contract of the sale of a house in the reign of one of the Ptolemies; and finally three rolls, united together and written over with fine demotic characters, reserved, as is well known, for civil purposes.

The first of these rolls was of considerable size, and to M. Champollion's astonishment, contained a *History of the Campaigns of Sesostris Rhamses*, called also *Sethos* or *Sethosis*, and *Sesoosis*, giving accounts the most circumstantial of his conquests, the countries which he traversed, his forces, and details of his army. The manuscript is finished with a declaration of the historian, who, after stating his names and titles, says he wrote in the ninth year of the reign of Sesostris Rhamses, king of kings, a lion in combats, &c.

M. Champollion has promised, on his return from Egypt, to give a complete translation of the manuscript. The period of the history is close to the time of Moses; and apparently the great Sesostris was the son of the king who pursued the Israelites to the borders of the Red Sea; so that a most important period in ancient history will be elucidated.

On the same MS. commences another composition, called *Praises of the great King Amemnengon.* There are only a few leaves of it, and they form the beginning of the history contained in the second roll. This Amemnengon is supposed to have reigned before Sesostris, because the author wrote in the ninth year of the reign of the latter. M. Champollion had not time to enter into a particular examination of these rolls.

The third roll relates to astronomy or astrology, or more likely to both these subjects. It has not been far opened; but will probably prove of the utmost interest, if, as is expected, it contains any account of the system of the heavens as known to or acknowledged by the Egyptians and Chaldeans, the authors of astronomical science.

A small basaltic figure was purchased with the MSS., and it is supposed found with them. On the shoulders of the figure is written in hieroglyphic characters the name, with the addition of *clerk and friend of Sesostris.* It did not occur to ascertain, until M. Champollion was gone, whether the name on the figure was the same with any of those mentioned in the rolls as belonging to the historian, or to others.—*Bull. Univ.*

Tuscans in the Expedition to Egypt.—The Tuscan government, with the concurrence of the king of France, has added several individuals to the expedition to Egypt. These are the Signor Ippolito Rosellini, professor of Oriental languages in the University of Pisa; the Signor Gaetano Rosellini, the uncle of the former; and the Signor Giuseppe Raddi, as naturalist; and the two draughtsmen, Dr. Alexander Ruci, and the Signor Angelelli; the former of whom has already travelled in Egypt, with Belzoni and Salt.—*Antologia di Firenze.*

Roman Architectural Fragments.—Some workmen employed in making a drain to carry off the rain-water from the Baths of Paulus Emilius, found near the church of S. Maria, in the Campo Carleo, large masses of marble, with most beautiful ornaments, belonging to the portico which surrounded the Forum; a long piece of a fluted column, of Phrygian or purple marble, about three Roman feet in diameter; a bracket of colossal dimensions, likewise enriched with the finest ornaments; the torso of a statue of a captive king, resembling others which have been found in the Forum;—and a fragment of an inscription of the time of Septimus Severus.—*Literary Gazette.*

§ 10. General Literature and Education.

Education in different parts of Europe.—According to the last annual Report of the French Society for the diffusion of Education by mutual instruction, the number of schools in Paris under the direction of the Society is twenty-five, which are attended by 3730 pupils, of whom 2268 are males, and 1462 females: there were six adult schools; three for each sex. These were attended by 248 individuals for evening instruction. A committee, of which M. de Stael was President, was occupied in making arrangements for opening Sunday Schools for the benefit of those who could not attend on working days. At the other schools several courses of lessons in drawing in outline were given in the hours of relaxation of the manufacturers preparatory to the instruction in drawing, in geometry and mechanics, as applied to the useful arts, according to the plan of M. Dupin, which is becoming daily more extended in France and other parts of the Continent.

The correspondents of the society furnish it with information as to the state of the schools in foreign countries:—In Denmark the schools at the end of 1827 were 2003 in number; and 368 were to be opened in the course of 1828. In Sweden the schools were 1830, in which singing, and drawing in outline were also taught. In the Netherlands in a population of 6,267,286 souls, the elementary schools counted 633,859. The Grand-Duke of Saxe-Weimar had promulgated a law obliging all fathers of families to send such of their children as had attained six years of age to the elementary schools. A school of mutual instruction had been founded in Barcelona, and preparations were making for the establishment of others in Upper Catalonia. In the island of Malta were two schools, in one of which 179 boys were instructed; in the other 155 girls. In Greece the adoption of the system of mutual instruction had been decreed by the President. At Kalassa, in America, there exists a school under the direction of a French master. In the other parts of America, in Africa, and in the Indies, the method is every day extending itself. In Madagascar there are 32 schools, to which there were admitted 1525 males and 433 females. The income of the French Society for the diffusion of mutual instruction amounted in 1827 to 23,056.75 francs, the expenditure to 20,993.80, leaving a balance of 2062.95 francs. The increase in the number of subscribers in 1827 was 944. At Florence a society for the diffusion of education on the system of mutual instruction has been also formed: the schools were so full that the admission of new pupils was obliged to be suspended until the education of others had been finished. The system had been extended with success into the smaller towns of the Tuscan State.—*Antologia di Firenze.*

Deaf and Dumb Asylums.—The number of establishments for the education of the Deaf and Dumb in the different states of Europe and the United States of America are as follows:—There are fifteen in France, one in Spain, one in Portugal, four in Italy, three in Switzerland, twenty-four in Germany, four in the Netherlands, two in Denmark, one in Sweden, eight in England, one in Russia, and seven in the United States of America.—*Degerando.*

Progress of Education in England.—Although the fact of the great and general increase of the means of education could not be doubted, it was manifestly desirable to establish some data, by which a calculation of the average amount of this increase might be obtained. Mr. Brougham, who had been Chairman of the Parliamentary Committee in 1815, accordingly addressed a considerable number of letters in the spring of 1828, to the ministers of parishes of each county in England (excepting Middlesex), and received answers in the highest degrees atisfactory. The results were communicated to the House of Commons, late in the Session, (in Mr. Brougham's absence) by Mr. Spring Rice; and that gentleman stated, that the clergy were extremely prompt and zealous in transmitting the requisite information.

From a consideration of the important facts contained in these Returns, we are enabled to arrive at some conclusions, to a certain extent satisfactory, upon the great progress of education in England.

The 487 Returns to the Circular Letter of 1828, are in the proportion of 1-21st to the whole number of parishes of England.

Of the 487 Returns, 123 are from Parishes which did not possess any Schools in 1818, but which have new Schools established; this is in the proportion of 1-17th to the 2124 parishes without schools in 1818.

In 1818 there were 1411 Unendowed Day Schools in the 487 Parishes, which now return 3260; increase 1849; the number being considerably more than doubled.

In 1818 there were 50,034 children educated in the 487 Parishes, which now return 105,571; increase 55,537; the number of scholars not being increased in quite so great a proportion as the number of schools.

As, therefore, the present number of Unendowed Schools in the 487 Parishes, compared with the number in 1818, is as sixteen to seven, the average present number of schools in the whole kingdom, as compared with the 14,000 in 1818, would be 32,000.

And, as the present number of Children in the Unendowed Schools of the 487 parishes, compared with the number in 1818, is as 21 to 10, the average present number in the whole kingdom, as compared with the 478,000 in 1818, would be 1,003,800.

With these data before us, we have reason to believe that the principle of doubling the number of children now educated in unendowed schools, as compared with the returns of 1818, may be applied with tolerable correctness to the whole kingdom. The increase of schools upon the Bell and Lancaster systems is in a much larger proportion. In the endowed schools, and the unendowed schools, the scholars may fairly be estimated at more than a million.—*Companion to the Almanac.*

Schools in Germany.—In the states of the South of Germany there is a law respecting schools, which has existed for above a century, but which has been greatly improved within the last thirty years. By this law, parents are compelled to send their children to school, from the age of six to fourteen years, where they must be taught reading, writing, and arithmetic, but where they may acquire as much additional instruction in other branches as their parents choose to pay for. To many of the schools of Bavaria large gardens are attached, in which the boys are taught the principal operations of agriculture and gardening in their hours of play; and, in all the schools of the three states, the girls, in addition to the same instruction as the boys, are taught knitting, sewing, embroidery, &c. It is the duty of the police and priest (which may be considered equivalent to our parish vestries) of each commune or parish, to see that the law is duly executed, the children sent regularly, and instructed duly. If the parents are partially or wholly unable to pay for their children, the commune makes up the deficiency. Religion is taught by the priest of the village or hamlet; and, where there are two or three religions in one parish, each child is taught by the priest of its parents; all of which priests are, from

their office, members of the committee or vestry of the commune. The priest or priests of the parish have the regular inspection of the schoolmaster, and are required by the government to see that he does his duty, while each priest, at the same time, sees that the children of his flock attend regularly. After the child has been the appointed number of years at school, it receives from the schoolmaster, and the priest of the religion to which it belongs, a certificate, without which it cannot procure employment. To employ any person under twenty-one, without such a certificate, is illegal, and punished by a fixed fine, as is almost every other offence in this part of Germany; and the fines are never remitted, which makes punishment always certain. The schoolmaster is paid much in the same way as in Scotland; by a house, a garden, and sometimes a field, and by a small salary from the parish; and by fixed fates for the children.—*Mag. of Nat. Hist.*

Population and University of Freyburg.—The city of Freyburg, chief town of the Breisgau, in Baden, has nearly doubled its population since 1786: at that period it contained 7694 inhabitants; in 1823 the number of souls amounted to 14,534. The University founded in 1454 reckons in the four faculties twenty-two ordinary, and fourteen extraordinary professors and teachers. The number of students amounted in 1824 to somewhat more than 600.—*Göttingische Anzeigen.*

Malte Brun's Universal Geography.—The seventh posthumous volume of the Précis de la Géographie Universelle par M. Malte Brun was brought out in the course of last year. The person who has undertaken the task of continuing this great work has acquitted himself successfully, and has obtained the praise of M. Bory de St. Vincent, in an article inserted in a recent number of the Revue Encyclopédique. The volume contains the description of Germany, Switzerland, and Italy. The author is pronounced by M. Bory de St. Vincent to have, in many respects, risen to a level with the style of Malte Brun, and to have produced a work astonishing by the variety of interesting recitals, by the superiority with which the different questions of Natural History connected with geography, and even subjects of high, moral, and political importance, are treated. In the latter, the author exhibits an independence, and a philosophy which have nothing offensive in them, because they are confined to conveying instruction.

South American Civilization.—Another instance of the progress towards civilization of the late Spanish colonies is added to those daily occurring by the establishment of a reading society, and of a periodical publication at Saint Iago di Chili. The latter bears the title of El Mercurio Chileno, and appears once a month in a pamphlet of 48 pages, price 5 reaux, or about ten-pence-halfpenny each number. The first number contains an essay on Public Credit, Medicine, the art of Curing Moral Infirmities, Public and Collegiate Education, and six pages devoted to varieties.

Chronicle of Ansbert.—A lost manuscript of the Chronicle, written in the 12th and 13th century by the Dean of Prague, Vincenz, and the Abbot of Muhlhausen, Gerlach, has been lately recovered in the Cathedral library of Prague. The discovery is of the greater consequence, as the manuscript contains the hitherto unknown Chronicle of Ansbert, which gives the history, by a participator in the expedition, of the crusade of the Emperor Frederick I. in 1189, an event of which no contemporaneous account has hitherto appeared. This Chronicle is, therefore, one of the most important historical fragments of the middle age; great light is thrown by it on the German, Hungarian, Servian, and Bulgarian history, and even at that of Bohemia a glance is given in a preface. The Chronicle of Ansbert has been edited and published by Dobrowsky, under the following title:—"Historia de Expeditione Friderici Imperatoris, edita a quodam Austriensi Clerico, qui eidem interfuit, nomine Ansberto. Nunc primum a Gerlavi

Chronico, cujis ea partem constituit, typis expressa, curante Jos. Dobrowsky.' —*Abend Zeitung.*

New German Edition of Pliny.—At the grand scientific meeting lately held in Berlin, a subscription was agreed to be made among the persons there assembled, for the collection of a sum to defray the expenses of collating the edition of the works of Pliny the Elder, now preparing in Germany, with the manuscript in the British Museum.

Origin of Geological Maps.—The naturalist Lister was the first who suggested in 1684 the idea of maps to denote by colours the superficial extent and boundaries of soils, clays, rocks, and mineral strata, but the appearance of the first geological map was in 1815. It was constructed by Mr. William Smith, after twenty-five years of unremitting application to the project.—*Mag. of Nat. Hist.*

Panegyrics of Bouterwek and Von Sartorius.—A festival in honour of the memory of the late Professor Bouterwek was held by the Royal Society of Sciences at Gottingen, on the 6th of September last. Professor Blumenbach addressed to the assembly the oration in panegyric of the deceased philologist, in which he gave a brief account of his life, and a review of his works. The oration will be published. On the same occasion the Hofrathe Herr Heeren, in an eulogistic discourse, paid a tribute to the memory of the late Professor von Sartorius, the colleague of Bouterwek, also a professor in the University of Gottingen, and who died shortly after his more renowned colleague.—*Allg. Lit. Leitung.*

The Tomb of Hafiz.—Like the tomb of Saadi, that of Hafiz was said to have been placed on the spot which he frequented when alive; and his grave, it is believed, stands at the foot of a cypress planted by his own hands. It is only six months since this sacred tree had fallen down, after having stood so many years; and though it was sawn off, the trunk is still preserved above ground, to be shewn to visitors. The tomb as to its present structure is a recent work, and is ascribed to the munificence of Kurreem Khan, not more than forty years since. The period at which Hafiz wrote is about four hundred and forty years ago. The original copy of his works, written by his own hands, was kept here, chained to the tomb, until about a century since, when Asheraff, the king of the Affghans, took Ispahan, and afterwards Shiraz, in the reign of Shah Sultan Hussein; and the book of Hafiz was then taken by him to Candahar, where it is now said to be.—*Buckingham's Travels in Persia.*

Women of Egypt.—M. Charles le Normant, one of the persons attached to the French Scientific Expedition to Egypt, speaks in the following terms of the women of that country, in one of a series of letters published in 'Le Globe':—

"Thus the women, of whom even a habit of toilsome labour failed to affect the development, preserve a delicacy of form, a just proportion in their limbs, a natural grace, heightened by a simple and striking style of dress. The poorest Arabian girl, clothed but in a blue chemise, and that in tatters, could give lessons in grace, nay almost in *coquetterie*, to the loveliest peasant of France. A pretty Arab woman is the beau ideal of a female opera dancer; a form inclined to the slender, but of just proportions; limbs finely turned and well set, feet very small, and of exquisite shape; hands so delicate, that the bracelets of the lower arm may be passed over them without opening; gazelle-like eyes, to which the black tingeing of the brows gives at once a softness and a brilliancy. Those of the poorest class wear nothing but a long blue chemise, and a veil of the same colour, a corner of which they hold in the mouth when they meet a man, especially if he be a Frank. The richer conceal their faces by a large mask of black silk, with nothing uncovered but the forehead and eyes. Ear-rings, profusion of necklaces of

shells, glass-paste, to which are attached amulets of silver, or of bright copper bracelets of the same variety and multiplicity, the chin tattoed blue, as well as the hands and a part of the arm; and the black painting of the eye-brows, complete the toilette of an Arab woman, which, in spite of its apparent bizarrerie, forms a whole both original and pleasing."

Printing at Egina.—A translation into modern Greek of the *Catechisme d'Economie Politique* of M. Say has been printed at Egina, and dedicated by the translator to the Count Capo d'Istrias.

German Publications in 1828.—The catalogue of the Leipsig Michaelmas fair announces 3235 new works; that of the Easter fair contained 3883: so that the year 1828 produced 7118 works. This exceeds greatly all preceding years, as appears by the following statement:—In 1814, there appeared 2529 works; in 1815, 2750; in 1816, 3197; in 1817, 3532; in 1818, 3781; in 1819, 3916; in 1820, 3958; in 1821, 3997; in 1822, 4283; in 1823, 4309; in 1824, 4511; in 1825, 4836; in 1826, 4704; in 1827, 5108; in 1828, 5654.

This last number differs from that before given as the produce of 1828, by the subtraction of the foreign books sent on commission to the German booksellers, and of maps, musical works, and publications announced as about to appear. The number of booksellers who furnished this supply, amount to 391. The greatest contributor was Cotta, of Stuttgard, who sent 68 new articles to the last fair. Theology is the most fertile field; in one half year the works of this class amounted to 367; in the same term, the number of other works was as follows:—Periodical, 185; history, 180; romances, 112, part translations from the French and English; almanacs, 76; and works on foreign languages, 99. The principal historical works announced are, third edition of the Roman History of Niebuhr, and the Historical and Philosophical Pieces of the same author; the fifth volume of the Geography of the Greeks and Romans, by Mannert; the fourth of the History of the German People, by Luden; the fifteenth of the Historical Works of Heeren; the sixth edition of the Universal History of Becker; and the eighth edition of the History of Germany, by Kohlrausch. A History of the Magyares (Hungarians,) by Mailath; a History of Prussia, by Voigt; and a History of the Jews, by Jost.—*Revue Ency.*

French Translations of English Works.—Among the works recently translated from our language into French, is the *Childe Harold's Pilgrimage* of Lord Byron, by the author of *Mélodies Poétiques.* The attempt, according to the *Revue Encyclopédique,* is a failure. M. A. J. B. Defauconet and M. Jean Cohen have found easier tasks: the former, in the translation of the *White Boys* of M. Baynim, the rest of whose works he promises to make known to French readers: the latter, in the translation of *Pelham,* which is spoken of as a successful publication.

Proceedings of the Royal Spanish Academy of History.—The academical year of the Royal Academy of History of Madrid terminated at the end of November, and with it terminated also the presidency of D. Martin Fernandez de Navarrete, who, in the usual discourse at the last session, which was held on the 28th of that month, enumerated the labours performed by the academy during the year: of these, the most worthy of notice, are: Provision for proceeding with the publication of the Chronicle of the King Ferdinand IV., which had been suspended for twenty years, and which is now ready for the press; also, preparing for the press, the twenty first books of the *Historia general de las Indias* of Gonzalo Fernandez Oviedo, with engravings of several designs to accompany the history, representing various utensils of the Indians, and animals, plants, fruits, and other objects of natural history peculiar to the country.

Public Education in Murcia.—Under the auspices of a Royal Economic Society, public schools for lessons in drawing, in arithmetic, practical geometry, and simple mathematics, have existed for nearly half a century in Murcia; and so early as the foundation of the society, the utility and necessity of a class for instructing young artisans in mechanics and chemistry applicable to the arts, was officially and formally acknowledged. The necessary funds have been hitherto wanting for the purpose, until a patriotic priest, D. José Lopez Padilla, parish priest of Santa Eulalia, came forward and took upon himself to defray the expenses of a professorship of mechanics as applicable to the useful arts. This beneficent proposal was accepted by the society, and a class was accordingly opened in the beginning of November.—*Gazeta de Bayona.*

Literary Fraud.—A recent number of the *Gazeta de Bayona* mentions that one of the most impudent literary frauds committed since the invention of printing, has been lately perpetrated at Madrid. An obscure and ignorant man, D. Firmin Caballero, proposed to publish by subscription, and in fact did so publish, a little work under the title of "Turkey, the Theatre of the present War, by Firmin Caballero." He advertised his book with every formality in the public papers, and by means of placards. The public bought the book with all avidity, until one, somewhat more learned than the rest, discovered that the new publication was no more than a literal reprint of a Tour to Constantinople, made by order of Charles III. in 1784, by D. Gabriel Aristizabals and several other officers still living, and published and got up in a very expensive manner at the king's printing-office.

Length of German Words.—The English language presents some few words which the short-winded race who adopt it as the medium for expressing their thoughts, are apt to consider somewhat long. Of these prothonotary is not perhaps the very shortest. Polysyllabic as it is, however, it forms but a member of the following word in German:

Viceoberappellationsgerichtsprotonotarius.
In English: Appeal-courts-chief-prothonotary's-deputy.

§ 11. Naval and Military Economy.

Russian Agricultural and Military Colonies.—In our last number we gave from the *Bulletin Universel* an account of a colony of this nature in Siberia; we now extract from the *Revue Encyclopédique* the following particulars of the regulations common to all the military colonies established by the late Emperor Alexander, and those which are still in progress.

In every regimental district (arrondissement,) two principal points are particularly attended to:—its regulations for the purposes of economy; and its constitution for the service of the frontier.

Every arrondissement is divided into households (ménages): every ménage consists of a farm and its dependencies, a house and its appurtenances, domestic animals and beasts of labour, agricultural instruments and household furniture, provisions, and corn for consumption and seed. The number of these establishments is in proportion to the number of men required for the frontier service.

The population of a regimental arrondissement is divided into that part which is fixed, and that which is moveable: the first never quit their homes; the other must be always ready to march. The fixed population consists of the heads of the ménages, cantonnists, invalids, primitive inhabitants above the age of forty-five years, and lastly, the families of all.

The management of the land, as well as all the domestic appurtenances, is entrusted to the heads of the ménages, who are also charged with the maintenance of the families left incomplete by the moveable corps when in campaign. The individuals belonging to these families so left are distributed

among the other ménages; they share the labour, and partake the produce and the profits. All that is acquired by the industry or the commerce of the chiefs of the ménages, and by the fixed members of the absent column, independently of the wants of the ménage, is their private property.

All the male children indiscriminately are admitted to the number of cantonnists. They are divided into three classes, according to age: the lowest, the middle, and the highest.

Every arrondissement is divided either into battalions, companies, or squadrons, according to the service. The masters of the ménages, distributed in a military manner, prepare for service, in the absence of the moveable corps, the men enrolled and destined to fill up the vacancies in the army in the field.

Every arrondissement is to have its church, schools, and other public institutions; an establishment for the breed of horses, and for the service of communications by posts; and a bank for advancing capital; a receptacle for decayed persons, and an hospital is founded at the expense of the crown. The children under age are maintained and educated at the same charge; those grown up, and in service, are restored to their families on their return. The colonized peasants may make all legal acquisitions; inequality of possessions is permitted: in this respect the general rule and consequences of industry and labour are allowed to take their course.

French School for Cavalry at Saumur.—The military school for cavalry at Saumur is one of the most complete establishments of the kind in Europe. It is a sort of normal school for the instruction of teachers, who thence pass into the army, and propagate the knowledge of which they have made an especial study during two years.

The principal objects of instruction are equitation and the employment of cavalry; its relation to other kind of troops; the study of the horse in the different stages of its existence; and farriery. For this purpose a veterinary school; a stud of English and Arabian stallions; a riding school, for the service of which there are kept 200 valuable horses of all breeds; a school for trumpeters, and two squadrons of cavalry-men, educating for instructors *(élèves instructeurs)*, are attached to the establishment. Captains chosen from the regiments were first sent for two years to Saumur; these have been replaced by lieutenants, intended to second them as instructors, and to succeed them in their ranks. The cadets of Saint-Cyr intended for the cavalry, on leaving that establishment, pass two years at Saumur before they are placed in regiments, in which they become in their turn lieutenant and captain instructors.

The squadrons of *cavaliers élèves* are composed, first, of soldiers put on the lists of promotion, and pointed out by the colonels of their regiments; second, volunteers chosen in preference from among the sons of soldiers, and young men whose age or fortune would be obstacles to their presenting themselves for competition at Saint-Cyr, yet who, on account of their superior education, would not be content to enter the ranks. These cavalry-men, subject to all the obligations of the military service, follow, besides, courses of instructions similar to that undergone by the officers. They are sent to regiments in quality of subalterns, when, after two years' sojourn in the school, they are found on examination capable of fulfilling not only the duties of subalterns, but also those of instructors. Every cavalry regiment receives two of them annually.

The instruction in the school comprises: 1st, The rules of exercise and evolutions of the cavalry, sword exercise on foot and horseback, the use of the various fire-arms; 2nd, the regulations of home service and of garrisons; 3d, a theoretical and practical course of equitation divided into four parts, that is to say, knowledge of the horse, the employment of the animal, his

preservation, and the breeding and choice for use; 4th, a course of military science and history, including topography, the administration of regimental offices and the theory of service in the field; 5th, drawing, applied principally to the study of the horse and to landscape; 6th, fencing, leaping, and swimming. The civil offices are performed by the soldiers, without distinction of civil and military.

The school is composed of a brigadier-general (*maréchal de camp*), commander; a colonel, second commander; a lieutenant-colonel, four superior officers, a chaplain, eight captain-instructors, three captain-majors, a captain quarter-master, a lieutenant of uniforms, five officers of the faculty, an equerry commandant, eight common equerries; a captain of the staff, professor of military science and history; two lieutenants of the staff, joint professors of military science and history; a professor of drawing, a professor of music, a veterinary professor, a riding and four sub-riding masters, fencing masters, &c.

The body of troops is composed of 507 men and 306 horses, organised as follows:—

First squadron . . A division of heavy cavalry—a division of dragoons.
Second squadron. Two divisions of light cavalry, one armed with the lance, the other with the carbine.
Third squadron . . A division of farriers—a division of trumpeters.

Every year, the inspectors-general of cavalry point out for the choice of the minister at war an officer of every corps of cavalry, as well of the guard as of the line, to be sent in quality of officer of instruction to the school. They wear there the uniform of the regiment to which they belong; they take their horses with them, and make use of them in the exercises and manœuvres.

The commissions of officer-instructor are reserved exclusively to the officers who have gone through the courses of the school in quality of lieutenants of instruction. Those who, at their examinations on leaving, obtain the two highest attestations of merit, are proposed to the king to obtain immediately either promotion, or admission into the guard.

The youths from Saint-Cyr form a squadron. Those who obtain the two highest attestations of merit are named to the king to be admitted to the guard, or to receive promotion, at the expiration of their four years' standing. When the farriers have received the necessary instruction, they are placed in that capacity in the regiments of the guard or of the line.

The number of horses of the establishment being insufficient to consume the shoes there made, which amount annually to 40,000, depôts are made of these in the fortresses, to come into use in time of war. The establishment makes use of no new iron, but procures that material from the arsenal, old gun-barrels, &c.—*Revue Encyclopédique.*

French Military Punishments.—The *United Service Journal*, a new periodical, of which the first number appeared last month, gives the following account of the punishment of French deserters. Four battalions of infantry of the line, of the garrison of Paris, were marched into the Place Vendôme, and formed into a hollow square. In a few minutes afterwards, the prisoners were brought from the guard-house of the Etat Major de Place, escorted by a serjeant's guard. They were dressed in great coats, waistcoats, trowsers, and tall caps (something of the Montero cut) of grey serge. They were marched into the centre of the square, and halted in front of the column; thence they were marched round the square, having halted at the end of every ten or twelve paces, and finally placed again near the column. A greffier, in black, then came forward, attended by the field officers of the regiments assembled, took off his hat, and produced a large sheet, containing the names and descriptions of the prisoners—their crime, trial, and condemnation. He then called out one of the culprits, who, advancing, cap in hand,

to the centre of the square, remote from every other individual, and of course conspicuous, heard the particulars respecting himself read in a voice that was audible to all present. He was then ordered back to the guard, when his companion was summoned, and underwent a similar degradation, the drums and music at intervals regaling them with appropriate music corresponding with our 'Rogue's March.' The troops were then marched past them; after which the prisoners were led to prison, previously to their being sent to work on the roads, with cannon balls chained to their legs for five years. The whole proceeding was very solemn, although the fellows affected to treat the matter very lightly.

Russian Manufactory of Arms. Arsenal of Tula.—The 'Aussland,' in an extract translated from a Russian work—the Description of the Arm Manufactory of Tula, by Joseph Hamel—gives the following account of the progress of that manufacture in Russia:—Russia is indebted for her first manufacture and foundery of iron to a Dutchman, Andrew Vinius, in 1632. Until that period the Dutch had supplied the Russians with the greater part of the material required for their artillery. Andrew Vinius erected his factory, for which Michael Feodorowitsch, the father of Peter the Great, gave him a patent, on the river Tulitscha, about twelve miles from Tula; procuring the iron from a mine shortly before discovered in the district of Diedilof, near the river Alena. Sixteen years afterwards, the first manufacture of arms was established at Moscow, under the direction of the armsmith, Francis Akin; and lastly, in the year 1712, in pursuance of an ukase of Peter, was the arsenal of Tula founded. Notwithstanding the preference shown to foreigners by the government, two native Russians, the blacksmith Mark Wassiljewitsch Siderof, and a soldier, Jacob Batistschef, deserved well of their country for several improvements in hydraulics, and the invention of some remarkable machinery for the fabric of musket barrels. Latterly, however, a foreigner, the Englishman John Johns, since 1817, has brought the fabric of arms at Tula to a pitch of perfection hardly to be excelled by the most celebrated manufactories of England. From this great arm manufactory there issue, yearly, 700,000 stand of fire-arms, and 25,000 side-arms. More than 3000 workmen are employed in their fabric.

§ 12. Geography, Statistics, and Public Economy.

Rivers of South America.—The question, which of the South American rivers, the Orinoco, the Amazon, or the Plata, be the greatest, is yet undetermined. The Rio de la Plata has the widest mouth, its breadth amounting to twenty-three geographical miles. But this river, like the English rivers, is navigable but for a short distance. Its inconsiderable depth becomes, even at the city of Buenos Ayres, an hindrance to navigation. The Amazon is the longest of all the rivers. From its origin in the lake Lauridocha to its mouth, its course amounts to 720 geographical miles. On the contrary, its breadth in the province of Juen de Bracamoros, by the cataract of Rentama, is scarcely so considerable as that of the Rhine at Mayence. The Orinoco at its mouth appears smaller than La Plata or the Amazons. Its length, too, amounts, according to astronomical calculation, to only 280 miles. But far in the interior of Guayana, at the distance of 140 miles from its mouth, at high water, the river is still 16,200 feet broad. At the periodical overflowing of its banks, its waters are elevated to the height of from twenty-eight to thirty-six feet above the common level of the river.—*Humboldt*—"*Athenæum.*"

State of Sicily.—The extent of Sicily may be stated at 11,505 Italian miles square, equal to 931,915 salme of Sicily. This territory, which is supposed in ancient times to have contained a population of 10,000,000 souls, is now occupied by 1,600,000 inhabitants. According to a census made in 1747, there were 47,069 individuals devoted to the church. The changes in

the times have diminished the number of this class, but they are still more abundant than even in Italy. The number of nobles and lawyers is also vastly disproportionate to the general mass of the population: but the data necessary to form any accurate conclusion on these points are wanting. It is calculated that the one half of the soil is employed in the cultivation of grain: the rest is occupied by rice plantations, gardens, vineyards, lands not capable of cultivation, and lands occupied by houses, cities, and rivers. The total rent of the land was estimated by the government in 1810 at 3,800,000 ounces.* Since that time the value has gradually diminished, and according to a recent work, 'Saggio sulle cause ed i rimedii delle angustie attuali dell' Economia Agraria in Sicilia di Niccolò Palmieri,' affairs in that island are in such a state that the land can no longer be let on lease: or, if such a thing as a contract for letting takes place, it is at the third part, and often less, of the rent previously paid: the estates are without stock—the landlords are under the daily necessity of resorting to legal measures for the recovery of the arrears due to them; and the sales by auctions of stock, and even of utensils, are continual.

The price of labour of the cultivator, and an allowance of profit for capital employed, being deducted, there remains no rent for the landlords. The general, local, or communal taxes amount to 2,600,000 ounces. This state of things is considered attributable in a great measure to the high rate to which articles of every kind rose during the occupation by the English, and the subsequent reaction. It is calculated, that, during the possession of the British, 12,000,000*l.* sterling, in naval and military expenditure, in subsidies and capital employed in commercial undertakings, were annually brought to the island.

Revenue of Great Britain.—The following is an abstract of the Net Produce of the Revenue of Great Britain in the year ending the 5th of January, 1829, compared with that of the preceding year:—

	Years ended January 5. 1828.	1829.	Increase.	Decrease.
Customs . .	£16,391,838	£16,125,118		£266,720
Excise . .	16,969,564	18,700,373	£1,730,809	—
Stamps . . .	6,375,140	6,666,363	291,223	—
Post-office .	1,385,000	1,400,000	15,000	—
Taxes . .	4,768,273	4,849,302	81,029	—
Miscellaneous	754,860	564,166	—	190,694
	46,644,675	48,305,322	2,118,061	457,414
	Deduct Decrease . . .		457,414	
	Increase on the Year . .		1,660,647	—

Revenue of the U. S. of America.—Aggregate of receipts during the year 24,940,863 dollars, 67 cents. Year's expenditure 25,637,511 d. 63 c. Balance remaining in treasury at commencement of 1828, 5,861,972 d. 83 cents. In 1829, 5,125,638 d. 14 cents. The receipts of 1828 had amounted to 2,000,000 d. more than was anticipated. 9,000,000 d. had been applied to the extinction of the capital of the debt, and 3,000,000 d. in payment of interest. The whole debt due 1st January, 1829, 58,362,155 d. 78 cents.—*President's Address to Congress.*

Tea Trade of Russia.—The Russian periodical, the Northern Bulletin of April, 1828, gives the following particulars of the trade of Russia, in tea, an article the consumption of which has become great in that country, where its use is regarded as a salutary innovation, and as tending to supersede the habit of drinking spirituous liquors. It forms the principal branch

* 10*s.* 9*d.* to the ounce.

of traffic at the fair of Nijni-Novgorod. The chests are enveloped in skins in a manner that the tea itself cannot be affected by the odour of any objects which are near it. It is on this account represented to be superior to the tea brought by sea to England, which it is said cannot be protected from the marine exhalations. The arrival of the article, more or less early in the season at the fair, depends on the thawing of the rivers of Siberia. It is transported on sledges from Kiakhta on the frontiers of China to Tomsk, in Siberia, where it sometimes has to wait six weeks or two months, the period of its embarkation, in decked boats. It descends the Oby and ascends the Irtish: then, again disembarked, it has to make a cross journey of 12 wersts to Perme, where it resumes its navigation, and is conveyed by water to Nijni-Novgorod. The expeditions set out from Kiakhta at the beginning of February. The convoy of 1827 arrived at Nijni-Novgorod on the 25th of July, on board eight *raschives*, decked boats with a keel and a rudder, each carrying from 5 to 6000 pouds (90 to 110 tons), the freight of which are valued at about 240,000*l*. The expense of transports amounts to about 10 per cent.

Russian Coin of Platina.—A recent number of the *Revue Enc.* in noticing a work on the productions in gold and platina of the Oural Mountains, gives the particulars of the experiment made by the Emperor Nicholas, to bring this metal into use as currency. His Majesty has caused money to be struck of platina, and offered for circulation without any compulsion on his subjects to receive it. The coin will have the value of three silver roubles, about 9*s*. 6*d*. It resembles in form and size the piece representing a paper-rouble, that is to say, it is about the size of an English shilling. Individual possessors of the metal are permitted to bring the material to the Royal Mint, to be there coined. The experiment has been made on a trifling scale only, on account of the small quantity of metal which has yet been worked. Great expectations are entertained from the results of the discovery, and this new use of it, to Russian prosperity.

Produce of the Oural Mines.—The produce of the mines of the Oural Mountains in 1827 was as follows. The mines of the crown yielded 89 * pouds 29 pounds 53¾ zolotniks of gold, and 2 pouds 7 pounds 25¾ zolotniks of platina. The mines belonging to individuals yielded 192 pouds 10 lbs. 49 zol. of gold, and 23 pouds 23 lbs. 40¾ zol. of plat. Total of gold, 282 pouds 0 lbs. 6¾ zol. Total of platina 25 pouds 30 lbs. 65¾ zol.—*Revue Encyclopédique.*

Increase of Population in Italy.—The city of Rimini contains 14,200 inhabitants, the population having increased 4000 in ten years. This augmentation proceeded principally from the poorer classes. The number of foundlings at the end of 1826 amounted to 424.—*Antologia di Firenze.*

Germanic Federation.—Commercial treaties between the principal states that compose the Germanic Federation have been recently concluded at Cassel. These treaties divide Germany into four principal districts for commercial relations; 1st, Austria, 2nd, Prussia, Hesse Darmstadt, Anhalt Dessau, Anhalt Bernberg, Anhalt Goethen, and a part of Schwartzburg, Sonderhausen; 3rd, Bavaria, Wirtemberg, Hohenzollern; 4th, Saxony, Hesse Cassel, Saxe Weimar, Brunswick, Hesse Homburg, Oldenburg, Saxe Coburg, &c. &c., Bremen and Frankfort.

Duration of Generations.—Some curious observations have been made by M. Villot on the duration of generations in the last century, the results of which he submitted in a memoir to the French Academy, and which he obtained by taking from the registers, in cases to the number of 48½, the

* Forty pounds to the poud.

date of the birth of a male child, and following up the series of its parents to the commencement of the century. In Paris, during the eighteenth century, to the time of marriage, the mean age of a man had been 29 years 68 hundredths, and that of a woman 24 years 72 hundredths; and thus the difference of age between the two engaging parties has been, as a mean term, 4 years 96 hundredths. With respect to the generation of a family, M. Villot procured 505 observations for the male sex, and 486 for the female. These latter shew that, in Paris, during the eighteenth century, up to the period of birth of a son, the mean age of a mother was 28 years 17 hundredths; while, from 505 observations relative to the male sex, there results that, in Paris, during the same century, the mean age of a father, at the period of the birth of a son, was 33 years 31 hundredths. This interval representing the duration of a male generation, it follows that there have been about three generations at Paris in the eighteenth century. M. Villot remarked, that this duration coincides with that which was adopted by the Greeks in their chronological calculations.

Duration of Life at Geneva.—The following table of the average duration of life of the inhabitants of Geneva for the last 260 years, is given in the *Nouvelles Annales des Voyages et des Sciences géographiques.*

	Average duration of life,
From 1560 to 1600,	18 years 5 months
1601 to 1700,	23 - 5 -
1701 to 1760,	32 8
1761 to 1800,	33 7
1801 to 1814,	38 6
1815 to 1826,	38 10

Canals of Pennsylvania.—Within the state of Pennsylvania there are about three hundred miles of canal actually completed, about one hundred and twenty miles of improved river navigation, and eighteen miles of railway; while the legislature has authorized the construction, in all, of one thousand two hundred miles of canal, the improvement of two hundred and twenty miles of river, and the formation of nearly six hundred miles of railway. Of the canals thus authorized, seven hundred and fifty miles more are actually in progress, and reasonable expectations may be entertained that they will be finished in less than three years.—*Quarterly Journal of Science.*

Effects of Prohibition.—During the reign of Napoleon vessels were despatched from London, freighted with sugar, coffee, tobacco, cotton-twist, for Salonica (Macedonia,) whence these articles of merchandize were carried by beasts of burden, by the way of Servia and Hungary to Germany and France: so that an article consumed at Calais would come from England, only twenty miles distant, by a route which, in point of expense, would be equivalent to a voyage twice round the globe.—*Say, Economie Politique Pratique.*

Commerce with the Havannah.—From a report made to the minister of finances at Madrid, by D. Claudio Pinillos, chief of the exchequer of the Havannah, it appears that the imports of that place, during the six first months of the last year, amounted to 8,406,863 dollars, and that the amount of the exports during the same term was 5,612,328 dollars, making a total circulation to the value of 14,019,191 dollars. This result, compared with that of the year before, shews an increase of 1,794,535 dollars. By another statement from the same officer, respecting the port of Matanzas, it appears that the imports there amounted during the year 1827 to 1,387,500 dollars, and the exports to 1,717,347 dollars, thus making a general circulation to the value of 3,104,847 doll.—*Gazeta de Bayona.*

Trade with the Baltic.—The following vessels passed the Sound in 1828:—

British	4,381	French	129
Prussians	2,257	Lubeckers	117
Swedes	1,289	Bremeners	60
Dutch	1,111	Oldenburghers	43
Norwegians	1,085	Hamburghers	23
Danes	907	Portuguese	8
Mecklenburghers	648	Sardinians	2
Hanoverians	570		
Russians	417	Total	13,263
Americans	216		

Consumption of Cotton.—In 1819 the consumption of cotton in Great Britain was 428,500 bags; in 1822, 550,800; in 1825, 615,940; in 1827, 662,900; and 1828, 732,700. By this statement, it appears that the consumption has nearly doubled within the last ten years.

Manufacture of Soap.—The quantity of soap manufactured in London in the year 1828, was 18 millions of lbs.; in Liverpool, 23 millions; and in Glasgow, 3 millions.

Supply of Cattle to London.—The following is the quantity of beasts and sheep brought to Smithfield market in the years 1826, 1827, and 1828:—

	Beasts.	Sheep.
1826	159,822	1,486,559
1827	150,686	1,524,466
1828	158,969	1,372,720

Importation of Grain.—The following is the return of wheat, barley, and oats imported into London, in the year 1828:—

	Wheat.	Barley.	Oats.
January	230	—	—
February	—	—	594
March	75	5	935
April	2,700	3	4,794
May	14,625	120	920
June	17,201	1,110	9,738
July	18,009	2,608	2,296
August	11,989	952	6,501
September	40,078	3,571	16,274
October	103,608	2,885	17,440
November	121,886	8,218	25,851
December	120,981	10,467	21,059
Total	451,382	29,939	106,402

In 1824, the foreign wheat imported was 4,610 quarters; in 1825, 138,031 qrs.; in 1826, 244,431 qrs. and in 1827, 97,375 qrs. The largest importations have been these:—In 1801, 1,263,771 qrs.; in 1802, 1,424,242 qrs.; in 1811, 1,432,615 qrs.; in 1818, 1,029,038 qrs.; in 1819, 1,582,787 qrs. In no other year, with the exception of 1797, 1806, and 1815, has the importation exceeded 500,000 qrs.

Paris Iron Founderies.—In the year 1822 there were only about four iron-founderies in Paris; one at Chaillot, conducted by an eminent English engineer, Mr. Edwards, and three others in different parts of the city. There are now no less than twenty, which employ great numbers of workmen. The number of founderies at Rouen has been doubled since that period; and at Nantes, Bordeaux, St. Quentin, Lille, Arras, and elsewhere, many considerable establishments have been formed.—*Paris Paper.*

Parisian Theatres.—The receipts of the chief Theatres in Paris for the two last months of the year 1828 amounted to 1,001,371 francs, or about 40,000*l.* sterling. The following is the proportion collected at each theatre:—

Porte St. Martin	124,426	Feydeau	83,786
The Circus	120,955	Gaité	70,433
Variétés	114,334	Théâtre Français	64,413
Théâtre of Madame	110,425	Vaudeville	54,782
Nouveautés	92,424	Ambigu	53,593
Opera	86,311	Odéon	25,469
			f. 1,001,371

Female Religious Communities in France.—According to a work of M. de Lanjuinais, Peer of France (Des Communautés religieuses en France) there were in the year 1823, in Paris alone, 168 religious communities of women: the number throughout the kingdom amounted to 1700, with a revenue of more than 12 million francs. There did not exist so many before the Revolution.

French Church.—The clergy in France in the beginning of the year 1824 amounted to 58,832, distributed as follows:—Archbishops and Bishops, 74; Vicars General, 287; Titular Canons, 725; actual Canons, 1255; parish priests, 2828; officiating priests, 22,225; vicars, 5376; supernumerary priests, 1850; heads of seminaries, 876; teachers in seminaries, 4044; nuns, 14,271.—*Almanach du Clergé.*

Religion in France.—In the year 1823 estimates were made in France which stated the amount of pious giffs and contributions to spiritual communities made since 1802 at 30 millions of francs. The greater part had been given towards the establishment of religious communities. The Almanach du Clergé for the year 1824 states the sum at less than 15 millions, and remarks, that of this entire sum only 2,900,749 francs had been contributed between 1802 and 1815; while from 1815 to 1823, 12,000,000 had been given.

Bills of Mortality for London.—The following is a general bill of all the christenings and burials within the city of London and Bills of Mortality, from December 13, 1827, to December 12, 1828:—

Christened in the 97 parishes within the walls, 988; buried, 1125.

Christened in the 17 parishes without the walls, 4922; buried, 3853.

Christened in the 29 out-parishes in Middlesex and Surrey, 16,300; buried, 12,832.

Christened in the 10 parishes in the City and Liberties of Westminster, 4335; buried, 3899.

Christened.		Buried.	
Males - -	13,360	Males	11,112
Females - -	13,185	Females	10,597
In all - -	26,545	In all	21,709

Whereof have died,

Under two years of age	6389	Between Fifty and sixty	1845
Between two and five	2326	Sixty and seventy -	1891
Five and ten - -	878	Seventy and eighty	1540
Ten and twenty -	861	Eighty and ninety	615
Twenty and thirty -	1488	Ninety and one hundred	100
Thirty and forty -	1790	One hundred and seven	1
Forty and fifty	1985		

Decrease in the burials reported this year, 583.

Silk Trade.—In the present moment at Spitalfields the distress is extreme, and probably would have arisen, under any circumstances, to a certain extent. The silk trade, being a fancy one, is always subject to great fluctuations; but in the present, as in all former instances of distress in Spitalfields, the ridiculous regulations of the workmen have grievously inflamed it.

Increase of Manufactures.—We have frequently had occasion to notice the general activity that has prevailed in the leading branches of manufactures, and how steadily they have gone on improving since commercial restrictions have been reduced, notwithstanding the assertions of interested individuals, that the trade of England was destroyed at the introduction of that system.

We have previously shewn the increased consumption of indigo at different periods during the operation of this system; but although this is a most important ingredient in the preparation of manufactures, there are many others used, the augmented consumption of which it is desirable to shew at this moment, and also to bring down that of indigo, with the other articles we shall enumerate, to the end of the year 1828, comparing the consumption in that year with the quantity used at home in each of the three years immediately preceding it.

	1825.	1826.	1827.	1828.
	lbs.	lbs.	lbs.	lbs.
Indigo, E. I. . . .	2,066,938	1,766,470	2,143,773	2,910,053
——— Spanish . .	255,172	134,577	255,589	154,944
Lac Dye	362,527	395,609	448,270	397,867
	cwt.	cwt.	cwt.	cwt.
Madder	69,047	47,722	49,132	67,096
——— Root . . .	Nearly the same in each year, about 34,000 cwt.			
	lbs.	lbs.	lbs.	lbs.
Cochineal	114,566	86,776	162,032	145,276

Argol . . . . . The consumption of this article is uncertain during the above period, but the imports will be some guide to us in this respect; independent of which, from the most unquestionable authority, we can state that argol has been in great demand throughout the last year. Imports of Argol in

1825.	1826.	1827.	1828.
Casks & cases.	Casks & cases.	Casks & cases.	Casks & cases.
1890	781	2124	3380

	lbs.	lbs.	lbs.	lbs.
Turmeric, Ho. Cons.	179,456	107,222	184,554	185,694
	tons.	tons.	tons.	tons.
Logwood	8700	6800	4200	7335
Fustic	4000	3200	1400	6070

We could give a variety of other instances, in proof of the steady improvement in manufactures, as deduced from the increased demand for ingredients used in them; but we think the above are sufficient to establish the truth of the assertion. The state of the stock on hand of the respective articles noticed, and a variety of collateral circumstances, may partially tend to alter the appearance of the consumption of a particular ingredient in any single year; but looking at this table as a general statement of the demand for commodities used in the preparation of the cotton, woollen, and silken manufactures, it is a most satisfactory proof of the steady progress they are making under the new commercial system, imperfect as it is and must be in its practice, until an alteration in the laws relating to the trade in corn takes place.

MONTHLY METEOROLOGICAL JOURNAL,

From December 21, 1828, *to January* 20, 1829.

51° 32′ 30″ N. 8′ 30″ W.

Dec. and Jan.	Lunations.	Thermometer. Mean Alt.	Barometer. 0 hour.	Winds. A.M.	Winds. P.M.	Atmospheric Variations. 9 h. A.M.	Atmospheric Variations. 0 hour.	Atmospheric Variations. 8 h. P.M.	Atmospheric Variations. During Night.	Prevailing Modification of Cloud.
21	6½ h. AM. ○	53	29.85	W.	S.W.	Fair, Cl.	Fair, Cl.	Fair, Cl.	Fair	Cirrostratus.
22		51	.86	W.	W.	—	—	—	—	—
23		49	.82	S.W.	S.W.	Moist	—	Rain	Moist	—
24		48	.40	—	—	—	—	—	—	—
25		39.5	.08	—	S.	—	—	Clear	Frost	Cumulus. Cumulo-stratus.
26		34 5	.23	—	S.W.	Clear	Serene	—	Fair	Cumulus.
27		37	.48	S.E.	S.E.	Serene	—	Fair, Cl.	—	Cirrostratus. Cirrocumulus.
28		40.5	.63	S.W.	S.W.	Fog	Fog	Fog	—	Cirrostratus.
29	11 h. AM. ☾	38	30.17	N.W.	—	—	—	—	Fog	—
30		39.5	.27	S.	—	—	Fair, Cl.	Fair, Cl.	Fair	— Cumulo stratus.
31		43.5	29.95	S.W.	—	Fair, Cl.	Rain	Rain	Fair	Cirrostratus.
1		34.5	.70	N.W.	N.W.	—	Fair, Cl.	Clear.	Sl. Fr.	— Cumulus
2		41.75	.67	N.	—	—	Clear	—	—	Cirrostratus.
3		37.5	.72	—	N.E.	Moist	—	Fair, Cl.	Fair	Cirrus. Cirrostr
4		39.5	.32	W.	N.W. H.	Rain	Fair, Cl.	Stormy	—	Cirro stratus.
5	2 h. PM. ●	33.25	.36	N.E.	N.E.	Fair	—	L. Snow	Fr.	— Cumulus
6		31.5	.73	N.	N.	Clear	Clear	Fair, Cl.	Fair	—
7		35	.78	N.E.	N.E.	Fair, Cl.	Fair, Cl.	—	Fr.	—
8		31.5	.72	—	—	—	—	—	Fair	—
9		35	.60	N.	N.	—	—	—	—	—
10		34	.40	E.	E.	—	—	—	—	—
11		30	.62	—	—	—	—	—	—	—
12	7 h. AM. ☽	34.5	.72	N.E.	N.E. H.	—	—	Stormy	—	— Cirro-cum.
13		34.5	.82	—	N.E.	—	—	Fair, Cl.	—	—
14		34.25	.82	—	—	—	—	Moist	—	—
15		33.75	.68	—	—	—	Moist	—	—	—
16		22.5	.41	E.	E.	—	—	—	Fr.	—
17		27	.45	—	—	Fog	Fog	—	—	Cirrus. Cirrostr.
18		24.75	.71	E.	N.E.	Clear	Fog	Fog	—	Cirrostratus.
19		23.5	.91	—	N.	—	—	Clear	—	— Cirrus. Cum.
20	2½ h. AM. ○	23.5	.89	—	—	Fog	—	Fog	L. Snow	Cirrostr. Cum.

THE JOURNAL OF FACTS.

MARCH, 1829.

§ 1. Natural Philosophy.

Gradual Absorption of the Waters of the Globe.—In an introductory essay to a work on the agamic and cryptogamic plants, collected by Messrs. Durville and Lesson in a scientific voyage round the globe, M. Bory de Saint Vincent, among other interesting speculations, has published the following ideas on physical geography. Setting out with the proposition so strongly countenanced by tradition, as well as observation, that the globe was originally covered with water, the author regards the causes which have occasioned the disappearance of a considerable portion of that element as still operating, and tending gradually to entirely dry up even the waters of the sea. The reasoning is in this manner:—The vast deserts of sand, mixed up with the salt and the remains of marine animals, of which the surface of the globe is partly composed, were formerly inland seas, which have insensibly become dry. The Caspian, the Dead Sea, the Lake Baikal, &c. will become dry in their turn also. Then the beds of these vast bodies of salt water will be sandy deserts. The inland seas, whether they have only one outlet, as the Mediterranean, the Red Sea, the Baltic, &c., or whether they have several, as the Gulph of Mexico, the Seas of Okotsk, of Japan, and China, &c. will, at some future time, cease to communicate with the great basins of the oceans; they will become inland seas, true Caspians, and in due time will likewise become dry. On all sides the waters of rivers are seen to carry forward in their course the soil of the continents. Alluvial lands, deltas, banks of sand, form themselves near the coasts, and in the directions of the currents; madreporic animals lay the foundations of new [illegible], and while the straits become closed, while the depths of the sea fill up, the level of the sea, which it would seem natural should become higher, is sensibly lower. There is, therefore, an actual diminution in the quantity of liquid matter.

Motions of the Barometer.—An article on the atmosphere, in the last number of the *Quarterly Journal of Agriculture*, gives the following as an index to the motions of the barometer:—1. In summer, a rise indicates the approach of fair weather. In winter, it generally indicates frost; but at all seasons, in this region, the same effect is liable to be produced by an east or north-east wind. 2. In summer, a fall generally precedes rain, or a south or south-west wind, or a hurricane or thunder. In winter, it usually precedes rain or thaw. 3. An unsettled state of the mercury usually obtains in unsettled weather. 4. The good or bad weather, which the barometer announces, will generally be of long or short duration, according as it is a longer or shorter time in coming, after the observed rise or fall of the barometer. 5. If the barometer rise from nine in the morning till three or four in the afternoon, fine weather may be more confidently expected; and if it fall from that hour of the afternoon until nine or ten at night, rain is indicated with greater certainty than when the reverse takes place; because these movements are in opposition to its natural horary oscillations.

Comparative Temperature of Springs, and of the Atmosphere.—In situations where the cold is not sufficient to hinder the circulation of water,

the temperature of perennial springs is almost identical with that of the atmosphere. Thus, in the vicinity of Edinburgh, the temperature of the perennial springs agrees with the mean temperature of the atmosphere. The same is the case in the whole of Atlantic Europe, and also, to a great extent, in Southern Europe. But Humboldt has discovered that this arrangement does not hold in the warmer countries, where the temperature of the springs is almost always some degrees below that of the superincumbent atmosphere. This phenomenon commences in the south of Europe; for Von Buch found a spring at St. Cesareo, near to Palestrina, at Rome, on the 20th of August, at 9½° R.; the temperature of the atmosphere 22° R.; and the mean temperature 12·6° R.—*Edin. New Phil. Jour.*

Natural Provision for Vegetation in high Latitudes.—We owe to Wahlenberg, says Von Buch, in an interesting memoir on the temperature of springs, read to the Royal Academy of Sciences at Berlin, (published in Poggendorf's excellent Journal,) the discovery of a beautiful arrangement in the economy of nature, viz. that the mean temperature of the soil and subjacent rock rises higher and higher above that of the air, the further we advance towards the north. By this means, polar situations support a number of vegetables, which otherwise would perish; nay, even life itself is thereby brought into places which would be dead and arid, and from which every living thing would flee. Who can conceive agriculture and cultivation, in a soil where temperature is 1° or 2° R., below the freezing point? But the temperature is actually not higher in places in which there are towns, and where corn is raised with activity and profit. It is the temperature of a great part of Siberia and of many inhabited valleys in Sweden.—*Ibid.*

Corrected Classification of the Colours of the Rainbow.—A correspondent of the *Philosophical Magazine* gives the subjoined classification of the colours of the rainbow as more scientific than the common enumeration. The writer observes, that he has often seen the rainbow, when very bright, repeated three or four times, every repetition being gradually fainter; each set of colours being half the width of the preceding (like the repeated notes of the musical octave on a divided string or line); and succeeding according to the following classification:—

Red.
Orange, divided into { Reddish, called Scarlet. / Yellowish, called Orange. }
Yellow.
Green, divided into { Yellowish, called Pomona. / Bluish. }
Blue.
Purple, divided into { Bluish, called indigo. / Reddish, called violet. }
Red.
Orange, &c.

Fossil Bones of antediluvian Bears.—At the sitting of the Academy of Sciences of Paris, on the 19th of January, an announcement was made by M. Cordier, of a recent discovery of bones of antediluvian mammiferous animals, in a cavern in the upper part of the mountain of Fessonne, towards the western extremity of the department of the Gard. The bones, accompanied by the reddish concretion which had enveloped them, were submitted to the inspection of M. de Cuvier, who at once recognised in them parts of the skeleton of a species of bear now extinct.—*Le Globe.*

Degrees of Resistance by Friction in various Substances.—The following are conclusions from experiments by Mr. George Rennie, F.R.S., detailed

in a paper communicated to the Royal Society. The friction of ice rubbing upon ice diminishes with an increase of weight, but without observing any regular law of increase. When dry leather was made to move along a plate of cast-iron, the resistance is but little influenced by the extent of surface. With fibrous substances, such as cloth, the friction diminishes by an increase of pressure, but is greatly increased by the surfaces remaining for a certain time in contact: it is greater, *cæteris paribus*, with fine than with coarse cloths: the resistance is also much increased by an increase of surface. With regard to the friction of different woods against each other, great diversity and irregularity prevail in the results obtained: in general, the soft woods give more resistance than the hard woods: thus, yellow deal affords the greatest, and red teak the least friction. The friction of different metals also varies principally according to their respective hardness; the soft metals producing greater friction, under similar circumstances, than those which are hard. Within the limits of abrasion, however, the amount of friction is nearly the same in all metals, and may in general be estimated at one-sixth of the pressure. The power which unguents have in diminishing friction, varies according to the kind and the fluidity of the particular unguent employed, and to the pressure applied.—*Phil. Mag.*

Elasticity of the Atmosphere.—At the height of three miles the air is twice as thin as at the level of the sea: that is, one foot, if carried up from the lower level, would spring out so as to occupy two feet, and, at the height of fifteen miles, one foot would spring out into thirty.—*Quar. Jour. of Agric.*

Uncertainty of Measure deduced from the simple Pendulum.—In an article in the Philosophical Magazine for February, on the discordances in the results of the Methods for determining the Length of the simple Pendulum, by Francis Bayley, Esq. F.R.S., the writer details the experiments made by him on the convertible pendulum, with a view to satisfy himself of the accuracy of the generally received determination of the length of the simple pendulum, vibrating seconds in our latitude; and states the conclusion he had to come to, that, at present, this instrument is far from furnishing a method of deducing a *standard measure*.

Discovery of Arsenic in Sulphur.—By means of caustic ammoniac 0.00061 parts of arsenic have been discovered in sulphur. To make the experiment, a certain quantity of milk of sulphur—of flowers of sulphur—or of common sulphur, should be subjected to the action of alkali; the liquid should be filtered, and treated with an excess of hydrochloric acid. If a yellow precipitate is produced, it is a sign that the sulphur contains arsenic. If no precipitate be perceptible, the liquid should be allowed to evaporate till a few drops only remain; a little ammoniac is then to be added, afterwards hydro-chloric acid, and lastly hydro-sulphuric acid: the arsenic, be it in ever so minute a quantity, will make a yellow precipitate.—*Geiger's Mag. für Pharm.*

Existence of Gold in the country watered by the Moselle.—In 1827 a piece of gold weighing 3⅞ ounces mixed with grains of quartz was found near Enkirch, a village between Trabach and Zell sous Andel, to the right of the Moselle. In 1776, grains of gold were found in the Goldbach near Andel, not far from Bermartle; and in 1804 and 1809 particles were also found after an inundation.—*Poggendorf's Annalen der Chemie und Physik.*

Gold Sand of the Rhine.—The gold sand of the Rhine produced in the territory of Baden in 1825, 1734½ crowns or 8671 florins 3 kreutzesr, while in 1824, 3378 crowns, or 16,890 florins, had been produced. The difference is attributed to the great increase of water of 1825.—*Hertha, Gaz. Geogr.*

Deceased Members of the Göttingen Scientific Society.—The Members of the Society of Sciences of Göttingen, who died between the annual general

meetings of the society in 1827 and 1828 (held in November) were Bouterwek and Sartorius (home)—(foreign) Peter Thunberg, professor of botany at Upsala, Joseph Planta, chief librarian of the British Museum, and Albert Thaer, Prussian counsellor of state at Möglin. Of the correspondents of the same society there had died—Vasilaus Michailowitz Sewergin, professor of mineralogy of St. Petersburgh, John Bruce, historiographer of the British East India Company (in the former year), and Egidius C. Joseph di Vivere, in Rome.—*Göttingische gelehrte Anzeigen.*

§ 2. Natural History.

Geographical Extension of Plants.—The *Trisetum subspicatum* and the *Draba confusa* are remarkable phenomena of geographical expansion. The former is found in all altitudes of the northern hemisphere and of the old continent which reach the point of perpetual snow: it forms a girdle to the arctic pole, and thence descends through North America to Mount Washington, in that part of the Alleghany chain which forms the western boundary of the state of Massachussetts, under a latitude corresponding nearly with that of the Pyrenees—the point in Europe where this plant stops in its progress southward. The *Draba confusa* is still more wonderful: it passes from the northern to the southern hemisphere; since, according to M. Jay, in a recent review in the Bulletin Universel, of a new *Flora Helvetica* by M. Gaudin, the specimens brought by Commerson from the Terra del Fuego, described by Lamark under the name of *Draba Magnellanica*, precisely resemble the *Draba confusa* collected at Zermatten, and which M. de Candolle describes as to be found in the Caucasus, on the Atlaï Mountains, in Kamschatka, Sweden, Lapland, and Labrador.

Correspondence in the Vegetation of Switzerland with that of various parts of the Globe.—One of the most remarkable characteristics of Switzerland is the correspondence which its vegetation presents with that of countries widely differing from it both by geographical position and elevation above the level of the sea. The high temperature of the deep valleys situate at the foot of the seven loftiest mountains* of the chain of the Alps, and which are contained within the territory or form the boundaries of the republic, favours the growth of many plants which are generally regarded as belonging to the basin of the Mediterranean. Other plants connect Switzerland and the plains of the north east of Europe: such are, to mention the most rare, the *Allium strictum* of Schrader, the *Oxytropis Uralensis*, and the *Astragalus alopecuroides et vesicarius*, and which form in the former country, or on its frontier, what may be termed Russian colonies at more than 400 leagues from the confines of that empire. The *Malaxis monophyllos* likewise exists in two points of Switzerland, the valley of Hasli, and the mountains of the cantons of Glaris, although the whole of Germany to the shores of the Baltic must be traversed before it be found again.

These species grow in Switzerland at elevations more or less considerable, in the region of the beech and fir-tree. Higher up are found the bare Alps, the Alpine Region properly so called, which, in its vegetation, corresponds with all the other mountain-ridges and summits of Europe, even those which, by the profound sections which separate them from the Alps, could not have received from the latter the vegetation which covers them. Thus, of the whole of the phanerogamic plants peculiar to the Alpine and sub-Alpine regions in the Pyrenees, in the high mountains of Corsica, and in

* Mont-Blanc, Monte Rosa, the Matterhorn, the Finsteraarhorn, the Giant Mountain, the Mount Fée, and the Jungfrau.

the Monte Amaro in the Abruzzi, a third only is wanting to the Swiss Alps. A line of intimate connection exists also between Switzerland and the shores of the Arctic sea, on either side of the polar circle. More than three-quarters of the plants of Lapland are comprised in the Swiss Flora, and additions are made daily to the number by the discovery of rare species which had not been before observed in Switzerland. Plants have also recently been brought from the north-west coast of America, both south and north of Behring's Straits, which had scarcely been seen before, except in Lapland and the chain of the Alps. Spitsbergen, Iceland, and Greenland, were before known to present instances of this correspondence; and the botanical researches in the late expeditions show, from Melville Island, seventy-five phanerogamic plants, of which the fourth part at least exists in Switzerland, and more than an eighth in the basin of Zermatten alone. Many other plants exist simultaneously in Switzerland, in numerous situations in the northern hemisphere, and in certain countries of the southern hemisphere also.—*Bulletin Universel.*

Cultivation of Cinnamon.—The cinnamon department of the island of Ceylon consists of from 25,000 to 26,000 people, who form a separate cast of their own, and who are altogether employed in the cultivation of the cinnamon tree (Laurus Cinnamomum), and in preparing the bark of that tree for the market. The exportation of this article from Ceylon frequently amounts to 6000 bales of 80 lbs. each bale. Although the cinnamon grows wild in the south and south-west part of the island, the Dutch and English governments have thought it advantageous to have it cultivated in four or five very large gardens; one of the largest of which, called the Marandan, is close to Colombo. From the bark of the cinnamon tree, the cinnamon, which is used for culinary purposes, is prepared. It is from the same bark that the cinnamon water and the cinnamon oil are prepared; and also a very fine oil, like the oil of cloves, is prepared from the leaves, and the finest description of camphor from the roots.—*Gard. Mag.*

Botany of the Cape of Good Hope.—M. Ecklon, a zealous Danish botanist, who holds the situation of Assistant Apothecary at the Cape of Good Hope, has published a topographical catalogue of his collection of plants, consisting of 2800 species, in which there are not less than 375 of the two families *Coronaires* and *Iridées*. Of these, he calls attention to 127 as new species. M. Ecklon distinguishes six regions of vegetation: the first extending from the level of the sea to an elevation of 500 feet; second, the region of the *Leucadendron argenteum*, to a height of 1000 feet; third, to the height of 2000 feet; fourth, the Alpine or Mountain Region, properly so called, to 3000 feet; fifth, to the height of 3500 feet, region of the plain of the Table Mountain, where, in rigorous winters, ice and snow are to be seen; sixth, the upper region, to the height of 6000 feet. In his catalogue, M. Ecklon marks the plants of the two families above-mentioned with the numerical sign of the region in which he discovered them, and gives the number of species collected by him of each family.—*Bull. Univ.*

Use of the Leaves of the Talipot.—All the books of importance in Pali and Cingalese, relative to the religion of Buddhoo, in Ceylon, are written on lamina of the leaves of the Talipot, or *Corypha umbraculifera*. The Pali and Cingalese character is engraved upon them with either a brass or an iron style. There are some of these books in Sir Alexander Johnson's collection, which are supposed to be between five hundred and six hundred years old, and which are still very perfect.

This leaf is used in the maritime provinces of Ceylon as a mark of distinction, each person being allowed to have a certain number of them folded up as fans, carried with him by his servants; and also, in

the Kandian country, in the shape of a round, flat umbrella, on a long stick. It is, moreover, used in making tents. Sir Alexander Johnston gave a very fine specimen of a tent made of these leaves, large enough to hold a party of ten persons at table, to the late Sir Joseph Banks, in 1818.—These leaves are also used by the common people, to shelter themselves from the rain, one leaf affording sufficient shelter for seven or eight persons.—*Gard. Mag.*

Balm of Mecca.—Szafra and Beder are the only places in the Hedjaz where balsàm of Mekka, or Balesan, can be procured in a pure state. The tree from which it is collected grows in the neighbouring mountains, but principally upon Djebel Sobh, and is called by the Arabs, *Beshem*. It is represented to be from ten to fifteen feet high, with a smooth trunk, and thin bark. In the middle of summer, small incisions are made in the bark; and the juice, which immediately issues, is taken off with the thumb-nail, and put into a vessel. The gum appears to be of two kinds; one of a white, and the other of a yellowish-white colour: the first is the most esteemed. The Bedouins bring it to market in a small sheep-skin; it has a strong, turpentine smell, and its taste is bitter. The people of Szafra usually adulterate it with sesamum oil, and tar. When they try its purity, they dip their finger into it, and then set fire to it; if it burn without hurting or leaving a mark on the finger, they judge it to be of good quality; but if it burn the finger as soon as it is set on fire, they consider it to be adulterated. The Bedouins usually demand two or three dollars per pound for it, when quite pure; and the Szafra Arabs resell it to the hadjis of the great caravan, at between eight and twelve dollars per pound in an adulterated state. It is bought up principally by Persians.—The balesan for sale at Djidda and Mekka, from whence it comes to Cairo, always undergoes several adulterations; and if a hadji does not casually meet with some Bedouins, from whom he may purchase it at first hand, no hopes can be entertained of getting it in a pure state. The richer classes of the hadjis put a drop of balesan into the first cup of coffee they drink in the morning, from a notion that it acts as a tonic.—*Burckhardt's Travels.*

Studying Botany at the Havannah.—In the isle of Cuba, the study of botany is cultivated and promoted with great zeal by D. Ramon de la Sagra, who besides a work on the fundamental principles of the science, as an introduction to a course of lectures on agricultural botany at the garden of the Havannah, and of a manual of botany for medical and manufacturing purposes, has established a periodical work, *Annals of Science, Agriculture, Commerce and Arts*, in which he publishes the particulars of his correspondence with the directors of botanical gardens in other parts of the world, and the results of his own experiments in the Havannah garden.—*Bull. Univ.*

The Purpura of the Ancients.—Dr. Heusinger, of the University of Würtzburg, in an article in a recent work, investigates the question, as to the species of animal in which the purpura of the ancients is to be classed. No doubt is entertained that the animal is the *Murex* of Linnæus; and it is clear, from what Aristotle says on the subject, that it was much used for dyeing; but to what species of the murex it is to be assigned, is a question not satisfactorily settled. Reasoning from what is to be found in the works of Aristotle and Pliny, Dr. Heusinger maintains, that the purpura which the Romans chiefly employed was the *Murex brandaris*. It is known that the *Conchylium* of the ancients is the *Buccinum* (the Buccinum Galea, according to Berini); but as Pliny treats the Conchylium as smaller than the Purpura, Dr. Heusinger supposes the Conchylium to be rather the *Buccinum lapillum undatum.*—*Göt. gel. Angeigen.*

The Shell of the Nautilus.—A note of MM. Quoy and Gaimard, read at

a meeting of the French Academy of Sciences, has revived in France the discussion as to the formation of the shell of the Nautilus. The researches of the great conchologist, Poli, were considered to have set the question at rest, and to have established, that the shell inhabited by the Nautilus is born with it, and is a secretion of the animal itself. The note of MM. Quoy and Gaimard reports facts at variance with the observations of Poli. It relates, that when at Amboyna, having before them a Nautilus, with a living animal pulp within it, they were cautioned by M. Hulstkamp, one of the government secretaries, against supposing that the animal they saw was the original proprietor of the shell. He assured them that the shell had been occupied by its present possessor, after the death of the natural proprietor, while it floated on the surface of the waters. M. Hulstkamp added, that he had often seen the real animal crawling on the sand near the shore: this he described by a drawing, which, although not very exact, was sent to the academy. Messrs. Quoy and Gaimard considered it to be of the genus *Atlante* of Lesueur.

A contributor to the Bulletin Universel combats this conclusion, and opposes to the opinion of M. Hulstkamp, the observations made by Poli, some additional facts, the fruit of the researches of M. delle Chiaje, and the judgment of M. Ferusac, in favour of the conclusions of these two naturalists. Poli, on examining with a microscope some eggs of the moluscule inhabitant of the Nautilus shell, when in a state advanced towards maturity, distinctly perceived the form of a little shell inclosed in it. The eggs are found in bunches near the stern of the shell: these masses contain upwards of nineteen thousand eggs. Poli had never found any adherence between the pulp and the shell, but he had presumed that at the time of its growth there was a temporary adhesion. M. delle Chiaje, however, had observed in a living individual in his possession, a membrane, extremely slight, by which the animal was connected with the shell. The contributor to the Bulletin abides by the ancient opinion, that the shell of the Nautilus belongs to the animal which inhabits it, and which adheres to it, by the suckers of its feelers; he suggests, moreover, that it is through these suckers that the calcareous matter, destined for the progressive growth of the shell, transudes. The last opinion, observes M. de Ferusac, in a note, requires to be well substantiated before it can be adopted.

The Piercers of the Flea.—The piercers of the flea which preys on human beings, appear to be provided with four rows of bead-like threads, two on each side, twisted around each other. The piercers of fleas, however, differ in different animals; in one taken from a dog, they are described as serrated along the edges. Mr. Thomas Carpenter, in correspondence with the *Technological Repository*, expresses his opinion, that the flea found in dogs may differ from those which feed on the human subject. He gives an account of a flea, taken from a mole, entirely different in shape from either of those above mentioned.

The Pectinated Mite.—The pectinated mite is to be found in the dust of poppy seeds; and although not larger than the common mite, will prey on that insect, as well as other minute ones which it finds among the poppy seeds. It is furnished with teeth, which are wanting in ordinary mites. Subjected to microscopic examination, under the power of a single lens, the twentieth of an inch focus, in a Varley's microscope, it appears to have two stout parts, which proceed from its head, one on each side, like arms, and each part is furnished, at its exterior extremity, with a sharp fang, and two toothed appendages like combs, from whence it derives its name. With this apparatus it seizes its prey, and conveys it to its mouth, and also employs it to great advantage whilst devouring it. Each of its eight very slender

legs are terminated with feet, furnished with four exquisitely shaped claws, with numerous joints, by which they are connected with the legs.—*Tech. Rep.*

Sagacity of Elephants.—The battering-train going to the siege of Seringapatam had to cross the sandy bed of a river, that resembled other rivers of the peninsula, which have, during the dry season, but a small stream of water running through them, though their beds are mostly of considerable breadth, very heavy for draught, and abounding in quicksands. It happened that an artillery-man, who was seated on the limber of one of the guns, by some accident fell off, in such a situation that, in a second or two, the hind wheel must have gone over him. The elephant, which was stationed behind the gun, perceiving the predicament in which the man was, instantly, without any warning from its keeper, lifted up the wheel with its trunk, and kept it suspended till the carriage had passed clear of him.—*Military Adventures, &c.*

The Death Watch.—The singular noise, vulgarly called the Death Watch, proceeds from two different insects: one a coleopterous insect, of a dark colour, and about a quarter of an inch in length, the *anobium tessellatum*. Notwithstanding its smallness of size, however, this creature is often the cause of serious alarm among the lower classes, from the noise that it makes; and which they consider as portentous of death to some one of the family in whose house it is heard. It is chiefly in the advanced period of spring that these insects commence their noise; and which is no more than the call or signal by which they are mutually attracted to each other, and may be considered as analogous to the call of birds. This noise does not arise from their voice, but from the insect beating on hard substances, with the shield or forepart of its head.—This insect, which is the real death-watch of the vulgar, emphatically so called, must not, however, be confounded with another minuter insect, not much unlike a louse, that makes a ticking noise like a watch; but instead of beating at intervals, it continues its noise for a considerable length of time without intermission. This latter insect belongs to a very different tribe; and is the *termes pulsatorium* of Linnæus. It is usually found in old wood, decayed furniture, museums, and neglected books; and both the male and the female have the power of making this ticking noise, in order to attract each other. These insects feed on dead flies, and other insects; and often, from their numbers and voracity, very much deface cabinets of natural history. They also live on various other substances, and may often be observed hunting for nutritious particles with great care and attention amongst the dust in which they are found, turning it over with their heads, and searching about somewhat in the manner of swine. Many of them live through the winter, but during that time, in order to avoid the inconveniences of frost, they bury themselves deep in the dust. —*Tech. Rep.*

§ 3. Medical Science.

Controversy on the Nature of the Yellow Fever.—The question as to the contagious or non-contagious properties of the yellow fever has become the theme of a warm dispute among the physicians of the French capital. At the head of an article in the October number of the *Bulletin Universel*, in which the doctrine of non-contagion is powerfully upheld by M. de Fermon, are affixed the titles of no less than twenty-four works on one or the other side of the question. The leaders of these two parties are Drs. Chervin and Pariset; the former advocating the doctrine of non-contagion, the latter that of contagion. The researches on the subject made by Dr. Chervin had obtained for him from the Medical of Academy, Paris, a prize of 10,000 francs. As the facts from which the conclusions of the contagionites are drawn are dis-

puted, and as the question is one depending, for the greater part, on facts, it is impossible for parties not joining in the dispute to form a decided opinion. The article of M. De Fermon contains positions which seem to deserve, both for their clearness and the advantage to be derived from attention to them, to be made more generally public. The following is his definition of the distinction between infection and contagion:—A contagious disorder is such as is communicated from one individual to another, not only by means of direct or indirect contact, but by respiration of the air corrupted by the miasmas or emanations arising from diseased persons. An infectious malady is one produced by an atmosphere poisoned by gases and exhalations arising from vegetable or animal substances in a state of putrefaction, without the presence of the sick being a necessary requisite to its propagation. M. De Fermon concedes that the two causes of propagation may exist together, but contends that such is not the case in the yellow fever.

The following deductions and reasonings from the nature of infectious disorders, and the conduct generally pursued with regard to them, are not less important than sound:—When a disorder is infectious, the place which is the centre of it should be evacuated, and a cordon (in such a case it would be really sanitary) should be established at a certain distance from the spot infected, to prevent people going there, and the people should not, as is now the usage, be shut up within the unwholesome district—an usage, says M. de Fermon, to be compared with the conduct of a chief magistrate of a town, who, if one or two of the inhabitants should fall into a sewer or privy, should surround the place with guards, to prevent their getting out, in the apprehension that they should infect the whole population. The writer goes on to assert, that facts are not wanting to show that there have been cases in which the yellow fever has proceeded from the exhalations of necessaries.

Non-existence of Hereditary Disorders.—A recent work, *L'Art de conserver la santé et de prévenir les Maladies Héréditaires*, by Dr. P. I. Mongellaz, of Paris, as reported in the 'Bulletin Universel,' contains some important views on the subject of hereditary disorders; such as consumption, scrofula, gout, gravel, madness, &c. The author shows, that the opinion that these and various affections are hereditary rests on very slight foundations, and he maintains, in short, that there are, strictly speaking, no hereditary maladies, but only hereditary dispositions to contract maladies; and that, by proper precautions, individuals born of parents subject to any of the maladies mentioned, may be secured from being themselves affected by them. The importance of this view of a subject on which there exist so many pernicious prejudices, and on which the fatality is sometimes so great as to cause the neglect of remedies that might be efficacious, is obvious.

Smoking Belladonna Leaves in Consumption.—A French professor, M. Cruveillier, recommends smoking the leaves of the belladona, for its soothing effect in cases of consumption, and as a practice which he has found to be attended with beneficial results. The leaves are first infused in a strong solution of opium, and dried imperfectly in the same manner as tobacco. The patients begin with two pipes a day, and increase by degrees to five or six in the same time. The reviewer of this practice in the 'Bulletin Universel' suggests, that as it is probable that the efficacy of this remedy consists in the combination of narcotic principles, and not in the mode of its administration, it might be better were it used in the form of aqueous vapours, as a more convenient manner of application, especially in the cases of females and children, and as free from the objection of having, simultaneously with the calming principle of fumigation, an empyreumatic oil, which might counteract its beneficial effects.

Analysis of Rhubarb.—According to the analysis of Professor Peretti, who has lately subjected rhubarb to examination, that substance contains tannin, gallic acid, malate of lime, gum, sugar, fixed oil, volatile oil, resin, a solid yellow colouring matter, oxalate of lime, and fibrous matter. The ashes gave carbonate of potash, sulphate of potash, chloride of potassium, oxide of iron, carbonate and sulphate of lime, and silica. The resin is the active part of the rhubarb; according to Dr. Tagliabo, in doses of ten or twelve grains, it operates strongly, and without griping. A remarkable circumstance in the analysis of M. Peretti is the discovery of sugar, which had not been previously announced. Its presence was discovered by a process which he supposes to be applicable to a great number of cases. He boils the alcoholic tincture of rhubarb until it becomes colourless; he filters and evaporates. The sugar remains mixed with a little malic acid and gum.—*Jour. de Phar.*

§ 4. Agriculture and Rural Economy.

Preservation of Grain in Reservoirs of Clay.—A German, M. Fischer, in the *Archiv fur die gesamte Naturlehre*, tom. iv., No. 1, communicates the following plan pursued by him in preserving grain. He erected with unburnt bricks a square building, 28 feet on each side, and 35 feet high; the walls 3 feet thick, and the bricks well conjoined by means of clay. The floor also was formed of worked clay, and raised a foot above the level of the surrounding ground. This tub, as it were, being covered with a simple roofing, and thatched, and the brick-work completely dry, 1100 sacks of dry wheat were poured into it: the wheat was covered with straw, and over this straw was placed a layer of dry clay, a foot thick, thoroughly trodden and beaten down. Several years afterwards, on the opening of this magazine, the wheat was found dry, and perfectly good; and, what is more, is said to have possessed, for the purposes of making bread and pastry, qualities far superior to those of wheat preserved in magazines admitting air.

Quick Fence on Exposed Lands.—To obtain good quick fences on the high and open parts of a country which is usually considered difficult, a correspondent in the Gardener's Magazine recommends the plantation of a belt of trees of the fir tribe, larch in preference to all others, about 22 yards in depth, defended on each side by posts and rails. The quick should be then run in the middle of the plantation, a space two yards wide on each side clear of trees being left to give proper room for light, air, clearing, &c. At the end of eight or nine years, when the posts and rails begin to fail, the thorn fence will be effective, and the timber trees on each side of it in such a state as not to be injured by sheep. Indeed, no cattle will eat any of the pine and fir tribe, more especially the larch, and that tree is found to succeed the best of any in these high, dry, and exposed situations. The correspondent who recommends this plan has had experimental proof of its success.

Action of Manure on Vegetables—Prize Question.—The Royal Society of Arras for the encouragement of Sciences, Letters, and Arts, have proposed the following subject for a prize of a golden medal, value 200 francs: 1. To explain, according to physical and chemical laws, the action of manure on plants, and *vice versâ*, the action of plants on manure, in the process of vegetation. 2. To ascertain from facts and observations, if the compositions or mixtures of divers sorts of manure, subjected to fermentation, produce on the soil, by the developement of new principles, an effect more decided than each of their component parts applied separately, and such as will afford remuneration for the expense they occasion.

Earth under Litter-Manure.—On the principle of the advantage in regard to manure derived to the soil from the feeding and folding of sheep,

several farmers of the department of the Ardennes, in France, have adopted the plan of placing in their stables, or stalls for cattle, clods of earth, over which they strew the litter, with a view to catch the slightest particles emanating from the sweat and excrements of their animals. They remove the manure so formed once a week, and either make it into a dung heap, or scatter it on their land immediately, according as it is required. The fullest success is said to have attended the experiment.—*Annales de la Soc. Linn. de Paris.*

Remedy for the Injury to Land by Sea-water.—To remedy the injury done to land by inundations of sea-water, it is the usage of the farmers of Brabant to plough the ground with two shares, one following the other, to the depth of fourteen or fifteen inches, and after this, to dig eight or ten inches deeper still, with the spade, then casting on the surface of the ground the earth so dug up. In this manner, the part of the soil impregnated with the salt water is covered up, and yields its place to a new surface, which has not suffered from the inundation. The operation is not expensive; six men, placed at equal distances, are sufficient to perform the required digging as fast as the ploughs advance. The ploughing being deep, the humidity which penetrates the soil, by degrees dissolves the salt, and renders it less obnoxious; till, at the end of a few years, if again turned up, it will have the effect of manure. The process has been adopted with success in Schleswigholstein, by M. Vogt, who, in 1825, communicated the results of his experiment to a German periodical.

Beer and Spirits made from Indian Corn.—Among the usages to which Indian corn is applicable, and which Mr. Cobbett, in his treatise, has omitted to mention, are the making of beer and spirits. It is known that large quantities of the latter article are made from it in Adams County, Ohio, Cincinnati, Nelson County, Kentucky, Cayuga County, New York, and doubtless in many other parts of the United States. Indian corn and rye are generally mixed about half and half. The produce from the Indian corn by itself is represented to be about two gallons from each bushel of the corn; a description of the mode of malting or the process of distillation is wanting.—*Gard. Mag.*

Remedy against the Black Fly in Turnips.—A farmer, who farmed extensively, had his turnips subject, for many years, to the attack of the black fly, in common with most of his neighbours. He was advised by some one who had tried with success what he recommended, to rub the turnip-seed among flour of sulphur, and to let it lie amongst it for some short time, and then sow both seed and sulphur together. By persevering in this practice for fifteen years, he evaded the attacks of the fly all that time, which was as long as he continued to farm.—*Quar. Jour. of Agric.*

State of Manure for Turnips.—If, from whatever cause, fresh dung is used for turnip, the crop will almost invariably be a light one; and this not so much from disease, as from an inability in the turnip plant itself to make use of the dung until it is in a proper state for its nourishment. This proper state only exists after an intimate union of the dung with the soil; and thus well rotted dung has, in most cases, yielded the most satisfactory results. But let the state of the dung be as favourable as we can make it, or even wish it (for we cannot always get it made so well as we wish it), when applied to the land, its admixture with the soil will depend almost entirely on the nature of the season which is to follow; and the season does not operate so much on the functions of the plant itself, as in paralysing the powers of the dung to give out nourishment to the plant. Did the plant possess all its functions in full vigour when the dung is applied, it would be able to extract nourishment from the freshest dung, in the most untoward season; but when it has to germinate, and come into being from the seed, its efforts

towards perfection must be puny indeed, if not cherished by seasoned food. —*Quar. Jour. of Agric.*

British Agricultural practices in Bavaria.—The Bavarians are less prejudiced than almost any other people against new practices, merely because they are new; they adopt useful inventions readily in agriculture, not less than in the other arts of life. Baron Eichthal, on his estate in the neighbourhood of Munich, has introduced various improved practices from England, and let a considerable farm to an East Lothian farmer. It is not doubted that the use of swing-ploughs, turnips on raised drills, and the whole of the East Lothian and Berwickshire husbandry, will be much more easily introduced in Bavaria than they could be in the south of England. The reason is plain: the country labourers of Bavaria are better educated than the country labourers of England.—*Gard. Mag.*

Culture and Utility of the Turnsol.—The oil of the turnsol (heliotropium) is in great use at Erfurth, where two spoonsful suffice for purposes for which three of olive oil would be required. M. Hermbstödt, in a report made to the Prussian Society for the Encouragement of Arts, states, from experiments made by him on a large scale in the cultivation of this plant, that from a Magdebourg acre of ground he has obtained about 30 bushels, (Berlin measure) weighing 1200 lbs., which yielded 200 lbs. of a fat oil, possessing certainly good qualities, but not capable of being preserved a month without turning rancid, and consequently not calculated to supply the place of olive oil for culinary purposes. These results agree, according to the 'Bulletin Universel,' with those of experiments made by M. Guajac on different sorts of oils at the request of the Paris Society of Encouragement. To be cultivated with success, the turnsol, like all other oleaginous plants, requires good ground, not too sandy, liberal supply of manure, and a distance of eighteen inches square between the stems.

Economy in Horses' Food.—The custom of feeding horses with coarse bread is common in France, and was introduced, unless we are misinformed, during the revolutionary wars, as more wholesome, more economical, and more portable than oats. The Furet de Londres furnishes the following proportions of ingredients for making such bread, as adopted by a Silesian experimental farmer:—Five gallons of oat flour, ditto of rye flour, yeast, and one gallon and a half of potatoes, reduced to a pap. With the bread made from this quantity of materials he fed seven horses a-day, at the rate of twelve pounds of bread, cut into pieces, to each horse, and mixed up with a little straw, chaffed and moistened.

Veal-fattening in the territory of Hamburgh.—There are few towns where meat is eaten in a fatter state than in Hamburgh, Altona, and Bremen. The fattening of calves is, consequently, an important pursuit with the peasants of the districts situate at such a distance from those towns, that the transport of milk thither is not easy. There are farmers who devote themselves exclusively to the fattening of veal, and who, for that purpose, buy up the calves of those who reside in more populous neighbourhoods, and who derive their profit from the sale of their milk. The calves are kept in pens, so that they are obliged to remain quiet. Their straw is not removed until the fattening is complete. It is the custom to feed them three times a day, gradually increasing the quantity from a third of a quarteron to eighteen quarterons of Hanover, at each meal, as the animal grows. The food is left before the calves only a quarter of an hour, be the vessels emptied or not; if not, the quantity of the next meal is diminished. Those fatteners who regard their character for fine meat give nothing but milk to their calves: others mix with the milk, eggs, crumb of bread, and flour; but the meat thus procured is less esteemed than that fattened on milk, and fetches a

lower price. The fattening lasts from twelve to fifteen weeks, and at the end of that time the calves will weigh from 150 to 200 lbs. A farm of forty acres with eleven cows, maintains twelve or fourteen individuals, and produces an income of two hundred dollars by the sole fattening of calves. On farms which keep forty cows, sixteen or twenty calves at a time are fattened.—*Bull. Univ.*

Everlasting Potato.—This root is ever ready to afford a supply of early potatoes, from one end of the year to the other: they are left undisturbed, except when a dish is wanted; they are not deeply embedded, but soon discovered on stirring the surface mould. The flower seems somewhat different from that of the common potato. They should be planted about the latter end of May; if planted sooner, they come in too early. Before frost sets in, the bed is covered with litter as a protection from its influence. They are taken up at Christmas, as fine new potatoes, and are either suffered to remain undisturbed, or perhaps, what is still better, the potatoes are completely forked up as they are wanted, and the smallest being separated are set apart for seed, under a heap, or hillock, to be replanted toward the close of the succeeding May. The smallest sprigs of this potato will grow.—*Gard. Mag.*

Salve for Wounds in Woolly Animals.—A number of the Bibliothèque Physico-économique recommends an ounce of hog's lard and four drams of powdered charcoal, well mixed as a pomatum, to be used for the wounds of wool-bearing animals, as producing a quick healing: it is also said to be efficacious in sores of a gangrenous nature.

Superiority of Merino Sheep.—In a pamphlet on the Improvement of Wool, by Mr. Joshua Kirkby Trimmer, the author maintains the superiority of the pure Merino breed over our native short-wooled sheep; and attributes to prejudice and mismanagement the loss of credit which this celebrated breed has sustained in England. He does not admit that the Merino is an unkindly feeder, or that its flesh deserves the epithet of *carrion*, once bestowed upon it. He states, that three Merinos of eight stone (Smithfield weight) may be kept for two Southdowns of twelve stone, and that the produce in mutton will be at least equal in weight and quality; while, in favour of the Merino wool, the weight will be one-third more, and the value, at existing prices, in the proportion of more than six to one.—*Quar. Jour. of Agri.*

Use of Sheep Dogs in Spain.—In no country are the sheep worried by dogs as in our own. In Spain, the very large dogs of the flock are used entirely for their defence against the wolves; and, in cases of attack, the sheep fly to, and gather round them, as friends and protectors. If the shepherds wish to remove the flock, they call to them the tame wethers, accustomed to feed from their hands, of which they keep a few in every flock, and these, however distant, if within hearing, obey the call, and the rest follow. With us, dogs are used, too often, for worse purposes.—*Trimmer on Wool.*

Deaths of celebrated Agriculturists.—Among the losses which the science of Agriculture has recently sustained, the death of Mr. Rennie of Phantassie, and of Mr. Curwen of Workington Hall, M. P., are more especially deplored. Mr. Rennie, the brother of the late celebrated engineer of that name, followed agriculture as a profession; and, by the talents, integrity, and zeal which he brought to the pursuit, reaped his due reward in character and fortune. His hospitable mansion was resorted to by strangers from every part of Europe, anxious to view and record his rural operations, and receive those valuable lessons of practice so frankly and cordially given. Mr. Curwen, in a sphere of exertion more extended and varied, found leisure to devote himself, with all the ardour of his character, to the improvement

of his own estates. The manner in which the result of his useful enterprise was communicated to the world, will not be forgotten by those who have witnessed that munificent hospitality which presided over the agricultural meetings of Workington. His ardent exertions to improve the agriculture of his native country, terminated only with his long and useful life.—*Quar. Jour. of Agr.*

§ 5. Horticulture.

Cultivation of Wall Pear Trees.—A contributor to the 'Gardener's Magazine' attributes the frequent failures of the crops of pear-trees, planted against walls, to the over-luxuriant state of the trees, from the generation of a superabundance of sap caused by the rich and deep border usually prepared by gardeners. This idea was suggested by the observations of a brown Beurrée tree against the east front of a farmer's cottage, and which, although planted on a limestone rock, never failed to yield yearly plenty of large and well flavoured fruit. This observation gave rise to the following successful experiment:—In 1813 an old pear-wall, 240 feet long, was replanted: the border for these trees was 12 feet wide, and only 26 inches deep, 8 inches of which were filled with stones, such as could be most readily procured in the neighbourhood, and the remaining 18 with the mould which composed the old border. By this scanty supply of earth for the roots of these plants, a fruitful and healthy growth, equally remote from debility and luxuriance, was obtained; and by this simple process fruit was procured all over the tree, as regularly as if it had been mechanically placed, both plentifully up the main stem, and on the lowest horizontal branches.—*Gard. Mag.*

Transplantation of a large Cedar of Lebanon.—In the year 1826 the proprietor of the Baths of Tivoli at Paris, M. Andéou transplanted a cedar of Lebanon, of about twenty-five years of age. At the time of this operation the tree was 28 feet 8 inches high, and 21½ inches in circumference at its base; it was of the finest growth. A kind of sledge was made for the purpose of the removal from the place where the tree formerly stood to its new site, a distance of 150 yards; the quantity of earth surrounding the roots, and which was removed with the tree, was six feet in diameter, and 18 or 20 inches thick. The weight was estimated at 6000 lbs. The sledge was drawn by forty men, and by favour of the precautions taken to avoid violent shocks or other accidents, the removal was effected without the slightest injury. In July last the cedar in question was alive and flourishing. —*Bull. Univ.*

The Odour of Roses increased by the vicinity of Onions.—Mr. John Murray, in a contribution to the 'Gardener's Magazine,' encourages, on chemical principles, the opinion, that the plantation of onions near rose-trees may increase the odour of the flowers of the latter. On analysing the onion, he had discovered that it contained much ammonia, which has the power of increasing, and of even restoring the perfume. Mr. Murray hints, that the odour of flowers might be heightened by the cautious administration of a solution of carbonate of ammonia, in the form of an occasional gentle watering. He pretends, also, to have discovered that a little powdered carbonate of ammonia sprinkled over rose-leaves preserved in perfume jars, increases the aroma.

Dead Leaves a protection to the Roots of Vegetables.—Heaps of fallen leaves are recommended to be placed around the roots of garden vegetables, to protect them from too great humidity, more hurtful to them than the cold, since they are more liable to decay with the damp than to freeze. Some leaves possess, in a greater degree than others, the power of throwing off

the wet; the leaves of the oak are endowed with this quality in an extraordinary degree; tender leaves, on the contrary, such as those of the lime-tree, admit the wet more easily. A report made to the Horticultural Society of Berlin recommends also the leaves of the beech-tree and field-moss as a preservative to the roots of vegetables.—*Bull. Univ.*

Method of procuring Early Bearing in Mulberry-trees.—In the garden of Mr. Keene, maltster, of Lambeth, is a mulberry-tree in full bearing, planted under the following circumstances:—About sixteen years ago, Mr. Keene received from the gardener at Lambeth Palace, a large branch, which had been blown down, and lay on the ground all the winter, from a tree that, tradition says, was the first of the kind imported into England by Cardinal Pole (who died in 1558); from which branch he cut off about a foot of the thick end, and planted it. The first year's shoots were luxuriant. In four years it was in partial bearing; in seven, in full bearing, and continuing ever since. In the same garden is a tree raised from another branch, which Mr. Keene had rescued from the fire, to which it had been condemned by a neighbour, by exchanging some of his own fire-wood for the mutilated mulberry stump. This Mr. Keene planted in his paved court, where it still grows, though exhibiting sad marks of the bad treatment it had met with.—*Gard Mag.*

Distinction between the Balm of Gilead and Silver Firs.—Although the silver fir attains a height and bulk, four or five times that at which the balm of Gilead fir generally becomes stunted; yet the two species of firs being considerably alike in leaf, it is not uncommon to confound them. An easy mark of distinction is this: the leading bud of the silver fir is covered with a coat of hard dry resin, which does not soil the fingers; the leading bud of the balm of Gilead fir is covered with a brilliantly clear liquid resin, which dries with difficultly, and adheres to the fingers when touched. There is also a difference in the smell, which it is easier to recognise than to describe.—*Ibid.*

Gravel Walks.—The following cheap improvement has been recommended in the construction of walks in gardens, lawns, &c., uniting the advantages of great hardness, durability, and freedom from worms and insects. When a new walk is made, or an old one reformed, take the necessary quantity of road scraping, previously dried in the air, and reduced as fine as possible; mix with the heap enough of coal-tar from a gas-work, so that the whole shall be sufficiently saturated, and then add a quantity of gravel;—with this lay a thick stratum as a foundation, and then cover it with a thin coating of gravel. In a short time the walk will be as hard as a rock, not affected by wet, or disfigured by worms.—*Register of Arts.*

New variety of Cypress.—'The Transactions of the Royal Society of Agriculture of Lyons,' 1823-4, contains a notice by A. Freminville, of a new variety of the bald cypress, which has existed for eighteen years at Laumusse, where it produced, for the first time, in 1823, katkins and cones. The disposition of the leaves which hang from the branches in stories, gives the tree an elegant appearance. These leaves fall all at once at the first return of cold.—*Bull. Univ.*

Art of cultivating Fruit Trees, a branch of School Education.—Instruction in the culture of fruit-trees forms part of the education of the ordinary seminaries in the states of Mecklenbourg Schwerin. No schoolmaster is admitted to exercise that function without a certificate of his capacity to teach the management of fruit-trees. The same masters are obliged to take care of fruit-gardens; and those who, previously to the promulgation of the law on the subject, were ignorant of the art, receive the due instruction at the expense of the school-fund.—*Bull. Univ.*

§ 6. Domestic Economy.

Receipt for removing Spots from Cloth.—The soldiers in garrison at Maubeuge, have, for some time past, for the purpose of removing stains from their clothes, made use of a water composed from the following receipt:—Pour a quart of warm water into a glazed earthen pan, and add a small quantity of white soap, and an ounce of powder of kali of Alicant; when this is thoroughly dissolved, add two spoonsful of ox-gall, and a little essence of lavender; let the whole be well stirred, and strained through a linen cloth, and kept in a bottle. In making use of it, a small quantity is to be placed with care on the spot, which is to be rubbed with a small brush, then washed with warm water, so as to remove all vestiges of the liquor applied, which might injure the cloth if allowed to remain.—*Journal des Connaissances Usuelles.*

Use of Pyroligneous Acid in preserving Animal Substances.—Professor Lampadius gives the following instructions for the use of pyroligneous acid in preserving meat:—The meat to be first salted in the usual manner; when taken from the brine, to be wiped with a cloth thoroughly clean, and exposed to the air. In this state a coat of pyroligneous acid, distilled to the strength of common vinegar, to be passed over it: the substance to be then hung in an airy situation, in the shade, and at a moderate temperature. "This process," says the 'Bulletin Universel,' "founded on the nature of the pyroligneous acid, which is one of the component parts of wood-smoke, has been tried in France by several persons; but although less expensive than the usual means adopted for smoking meats, it has been found to communicate a styptic and disagreeable flavour, difficult to get rid of.

To preserve Vegetables.—To preserve cabbages and other green vegetables, boil them over a fierce wood fire, so as to preserve their colour when completely cooked; grind them into a complete pulp, by some such means as are used to crush apples for cider, &c.; then let them be subjected to the action of the press (being first put into hair bags, or treated as grapes are in wine countries), till all the fluid matter is separated from them; the remainder of their substance being wonderfully condensed, and as hard as the marc from the wine-press. Then let it be rammed hard into carefully glazed air-tight jars (or tin cases, if preferred), and boiled as in the case of bottled gooseberries. If jars are used, they may be sufficiently secured by having two pieces of bladder tied successively over them; when the air within them is absorbed by heating the inclosed substance, their surface becomes concave by the pressure of the atmosphere; and, as long as it remains in this state, the matter within is safe. If it should be thought requisite to preserve the flavour of the vegetables entire, an extract should be made from the expressed liquid, and added to the marc. But spinach, cabbage, and many other vegetables, have abundance of flavour in them in their dry state, without this addition. The preparation of the vegetable matter for use is accomplished by adding a sufficient quantity of milk, water, gravy, lime-juice, &c., to the marc, and warming it up.—*Quarterly Journal.*

Receipts for Curaçao.—An article on the Art of the Liquorist, in the last Number of the 'Technological Repository,' furnishes the following recipe for making this liqueur:—Put into a large bottle, nearly filled with alcohol, at thirty-four degrees of Baumé (or thirty-six) the peels of six fine Portugal oranges, which are smooth skinned, and let them infuse for fifteen days. At the end of this time, put into a large stone or glass vessel, 11 ounces of brandy at eighteen degrees, 4½ ounces of white sugar, and 4½ ounces of river-water. When the sugar is dissolved, add a

sufficient quantity of the above infusion of orange peels, to give it a predominant flavour; and aromatise with three grammes of fine cinnamon, and as much mace, both well bruised. Lastly, throw into the liqueur thirty-one grammes (one ounce) of Brazil wood, in powder. Leave the whole in infusion ten days, being stirred three or four times a day. At the end of this time taste the liqueur; and it be too strong and sweet, add more water to it; if too weak, add alcohol, at thirty-six degrees; and if it be not sweet enough, put syrup to it. Give it colour with caramel when you would tinge it.—*Tech. Rep.*

§ 7. Mechanical Arts.

Inventions for the Improvement of Rail Roads.—The Chevalier Jos. de Baader, of Munich, announces, through the *Bulletin Universel*, an improved method of constructing rail roads. He affirms that the inconveniences and present incomplete construction of rail roads have been the subject of his consideration for twenty years, and that he has at length succeeded in discovering remedies for all the imperfections and obstructions to which they are liable. The advantages proposed by the inventor are in substance as follows:—The grooves so constructed, fixed, and joined, that the wheels may run with the greatest facility and without any lateral friction;—the more solid imbedding of the foundation, and protection to the grooves from gravel and other matters liable to be thrown on them by the horses—improved construction of the carriages, and the adoption of a particular mechanism for turning them in every direction and at any time, and giving them the usual length of other carriages, so that the rail road may be allowed to follow the windings of any country; the adaptation of these carriages to ordinary roads as well as to rail ways; a contrivance by which they may quit the road at any point to allow other carriages to pass, or for any purpose. Mr. Baader also announces the discovery of a new principle by which the carriages may be propelled by stationary steam-engines, erected at certain distances. These inventions are stated to have been put to the proof on a considerable scale, before the Royal Academy of Sciences, and the Committees of Directors of the Polytechnic and Agricultural Societies, of Munich, and to have obtained the approbation of those bodies. The Chevalier Baader urges the formation of a rail road, and the adoption of his plans in its construction between Havre and Paris. He offers to furnish designs and models, with instructions for executing them, on equitable terms.

New Rail Road in France.—Measures are taking to form a rail road between Andrésieux and Roanne, at which town the Loire becomes navigable. The object of this rail road is to complete the system of roads and canals established in that part of France, and to perfect the communication between the north and south of the kingdom, from Marseilles and Lyons to Paris and Havre.—*Bull. Univ.*

Smoke-consuming Furnaces.—The late celebrated James Watt, in the specification for his patent for furnaces to consume their own smoke, gives the following explanation of the principle on which his invention had proceeded:—The improved method of constructing furnaces or fire-places consists in causing the smoke or flame of the fresh fuel, in its way to the flues or chimney, to pass, together with a current of fresh air, through, over, or among fuel which has already ceased to smoke, or which is converted into coke, charcoal, or cinders, and which is intensely hot; by which means the smoke and grosser parts of the flame, by coming into close contact with, or by being brought near unto, the said intensely hot fuel, and by being mixed with the current of fresh or unburnt air, are consumed or converted into heat, or into pure flame free from smoke. This is effected, first, by stopping up every avenue or passage to the chimney or flues, except such

as are left in the interstices of the fuel, by placing the fresh fuel above or nearer to the external air than that which is already converted into coke or charcoal; and by constructing the fire-places in such manner that the flame, and the air which animates the fire, must pass downwards, or laterally, or horizontally, through the burning fuel; and pass from the lower part or internal end or side of the fire-place, to the flues or chimney.—*Reg. of Arts.*

Use of Porcelain for Block-sheaves in Shipping.—The *Bulletin Universel* for 1828, No. 10, *Section Technologique*, highly commends the articles in porcelain, made from a clay found in quarries near Cherbourg. The existence of this material had been known for many years, although it had not been applied to any useful purpose until a Mr. Langlois undertook to turn it to profit by establishing a porcelain manufactory at Valognes in 1801. One of the qualities of this clay is the property of resisting, in an extraordinary degree, the action of fire, which renders it well calculated for culinary purposes and for the manufacture of crucibles. It has also been employed with success by Mr. Langlois for block-sheaves, bed-rollers, kegs for acids, cock-stoppers, and plates for inscriptions and numbering of houses. The use of block-sheaves made of this porcelain for the marine is recommended on the authority of several instances in which it has been tried, and especially that of the schooner *La Jeune Laure*, which was rigged with blocks having sheaves of this description, in 1815. They performed their office well during ten years of active service.

Improved Black Dye for Silk Goods.—*The Register of Arts*, Part xix., contains a table of experiments made by the contributor of the report, and Mr. Hemming, the chemist, on specimens of a new and improved dye in the manufacture of black silk. On the authority of the results of these experiments, it is affirmed, that a permanent blue black is produced, not only capable of withstanding the action of tea, wine, and all vegetable acids, but of mineral acids also, and of caustic alcalies when sufficiently diluted to prevent the destruction of the fibres of the silk. The process is also represented to have the effect of considerably increasing the weight, attenuating the thread, and augmenting its bulk: while the texture of the silk is said to be rendered proof against the corrosive action of acids which act destructively on every species of goods dyed in the ordinary way. The improvement is stated to have been introduced into this country by a young foreigner engaged in executing some work on trial for a dye-house in Spitalfields.

Kneading of Bread by Machinery.—A company has been established in Paris, in the Faubourg St. Antoine, to supply the metropolis with pure bread. Among other improvements adopted by this Society is that of kneading the dough by means of steam machinery. This substitution for the working of the bread by manual labour, besides the greater cleanliness of the process, has the further advantage of allowing yeast to be dispensed with, —the additional power of the machine being sufficient to give the bread its proper degree of lightness without any foreign aids. The capital of the company is divided into 4000 shares of 1000 francs each.—*Bull. Univ.*

Economy in the use of Gas.—The 'Philosophical Magazine' of February gives the following results of experiments made by the Rev. W. Taylor of York on the combustion of coal-gas:—

Exp. 1.—A piece of wire-gauze being laid upon the glass chimney of a common Argand *gas*-burner, the flame is immediately enlarged to twice its former dimensions, and its light fully doubled.

(A similar experiment being tried with a common Argand *oil*-lamp, or reading lamp with a flat wick, the flame is often enlarged, but so discoloured as to yield less light.)

Exp. 2.—Place the finger, or a bit of cork, so as to close the lower opening of the interior passage of a common Argand *gas*-burner:—the flame experiences a sudden enlargement, with an increase of light nearly equal to that in Exp. 1.

(The inner air-passage of an Argand *oil*-lamp being closed, the flame is greatly deteriorated and darkened.)

Exp. 3.—The air-tube of an Argand *gas*-burner being stopped as in Exp. 2, and the flame consequently enlarged, no further change happens when wire-gauze is laid on the top of the glass chimney.

Exp. 4.—Over the glass chimney of a *single-jet* gas-burner, wire gauze being laid, produced no enlargement of the flame, and no increase of the light.

In an experiment at the rooms of the Mechanics' Institute, York, it was found that *one hundred* feet of gas were consumed in three hours and twenty-five minutes, by six Argand gas-burners in the ordinary state; while the same gas-burners, *provided with wire gauze caps* to their chimneys, yielded an equal light for an equal time, but consumed only about *fifty* feet of gas.

Whalebone Furniture.—The use of whalebone as a substitute for cane has been introduced with success by M. Bernardière, in the manufacture of articles of furniture, and is practised under his direction in the houses of correction of Saint Lazare and Saint Denis. For these purposes the whalebone is found to have advantages over the cane in being more supple, more elastic, and consequently less fragile. It can be worked in any form, in all variety of colours, and can be employed in the execution of any designs requiring combination of colours.—*Bull. Univ.*

Manufacture of Whiskey.—It is a remarkable fact, says Major-General Stewart, in an article on the prevention of smuggling in the Highlands, inserted in the Quarterly Journal of Agriculture, that a spirit of the best quality and flavour has been distilled by men with their apparatus at the side of a burn, and perhaps changing weekly from fear of a discovery: malting on the open heath far up the hills, and hurrying on the whole process to avoid detection; yet, with all these disadvantages, they received the highest price in the market for the spirit thus manufactured. The quantity might perhaps be less than what could be produced by a more regular process of distillation; but then the liquor was so much superior in flavour and quality, as to compensate for the deficient quantity. Several of these men have been employed, by way of experiment, in a licensed distillery on the estate of Garth, with directions to proceed in their own way, only to be regulated by the laws under the controul of an officer;—yet, with the advantage of the best utensils, the purest water, and the best fuel, they produced a spirit quite inferior in quality and flavour to what they made under the shelter of a rock, or in a den, and it sustained neither the same price nor character in the market.—*Quar. Jour. of Agri.*

New Sight for Fire-arms.—M. Burel has adapted to fire-arms, but principally to military pistols, a mirror of 12 millimètres (0.47244 inches), fixed near the mouth of the barrel. The eye of the firer sees its own reflection, and acquires thereby great precision. The experiments of M. Burel are said to promise advantageous results; and officers, and sportsmen, to whom he has submitted his invention, are represented as highly approving of it.—*Bull. Univ.*

Grape-shot for Sporting.—M. Jenour's patent shot, in which the use of grape-shot is applied to sporting purposes, is described as follows in the *Register of Arts.* The small shot are inclosed in a net-work of fine brass

wire, and the interstices between the shot filled with bone dust; it is then put into a cylindrical paper case or cartridge, so as to occupy about half its length, and the remaining space is filled with gunpowder; by these means the sportsman is saved the trouble and inconvenience of charging from a powder flask, and he can triumph over a greater number of killed and wounded. The shot thus collected into a cluster, M. Jenour contends, take more effect than if allowed to disperse immediately on the discharge of the gun.

Dissertations on Subjects connected with Arts and Manufactures.—The Society of Arts have appropriated seven evenings during the present Session, to occasional meetings, for dissertations on subjects connected with the arts and manufactures of the country, illustrated by ancient and modern specimens. The dissertations commenced on Tuesday, the 27th of January. Ancient and modern pottery and porcelain occupied the first two evenings; and the subjects proposed for illustration on the others, are the arts of stereotype founding and printing, and of casting in plaster of Paris; and the manufactures of glass and paper. The subsequent evenings fixed for the purpose of these dissertations, are March 10th and 24th, April 14th and 28th. —*Tech. Rep.*

§ 8. Fine Arts.

Picture Prices.—The splendid cabinet of paintings of M. Danoot, of Brussels, has been recently sold by auction in that city. The sale was numerously attended by amateurs and connoisseurs, among whom were several Englishmen. Many of the paintings brought high prices. A small marine subject, only 14 in. by 12, by Claude Lorrain, was sold for 13,500 florins (1170*l.*) The celebrated picture, by Teniers, of Bow Shooting, but generally known among connoisseurs as the Diamond, fetched 10,200 florins (884*l.*) A cabinet picture, by Paul Veronese, 4500 florins (390*l.*); Murillo's Beggar Boy, 3500 florins (300*l.*); a beautiful portrait of Rembrandt, painted by himself, 9500 florins (820*l.*) The Rape of the Sabines, and its companion, 14,000 florins (1210*l.*) The Flight into Egypt, by the same painter, 8,200 florins (710*l.*) A large landscape, by Teniers, 4000 florins (345*l.*); and a small picture by William Van de Velde, 4000 florins (345*l.*) The total amount of the sale was 136,609 florins (11,850*l.*)

§ 9. Antiquities.

Researches in the Levant.—At a recent meeting of the French Institute, there were laid before the assembly the portfolios of M. Riffault, a great Levantine traveller, containing drawings of objects in the various branches of the sciences. M. Riffault quitted France in 1807, and passed the subsequent twenty years of his life in travelling in Spain, on the shores of the Mediterranean, and in Turkey, Egypt, and Nubia. His collections embrace all the branches of natural history, antiquities, and arts. Thirteen years were spent in exploring and excavating the soil of Egypt. The number of his drawings amounts to six thousand consisting of five hundred (coloured) of plants, with all the details of their blossoming and fructification; several hundred drawings of fishes, shells, and insects, with the skeletons of the first, and a thousand representations of quadrupeds, reptiles, birds, and insects, belonging to the Nile and Egypt, with the form of their skeleton. The rest of the drawings are of antiquities, executed with the most minute care. To M. Riffaut, also, is owing the discovery of sixty-six statues, several of which now enrich the museums of Turin, Rome, Florence, England, Bavaria, &c. He also excavated and exposed six temples and monuments in ancient Thebes; two hundred and fifty inscriptions, Greek, Latin, and hieroglyphic have been copied by himself. The geography and topography of the country also are enriched with maps,

plans, views, taken by himself. A number of drawings are devoted to the illustration of the usages, ceremonies, games, and divers callings of the inhabitants. The ornaments worn by women are described in sixty drawings. Two hundred and thirty instruments used in those countries in the operations of surgery are also represented. Agriculture likewise, and the implements employed in its exercise, meteorology, music, the construction of boats used in the navigation of the Nile, arts, and manufactures, have all occupied the attention of M. Riffault.—*Le Globe.*

Egyptian Mummies of Cats.—M. Le Normant, in his letter from Egypt, dated the 8th Nov. 1828, gives the account of the discovery of a quantity of mummies of cats in the vicinity of Beni-Hassan. Some of these relics were found in a large hole, funnel-shaped, in a sandy plain between the Nile and the mountain. The bones of the cats were taken from the earth by raking it with the hands, and other mummies were found in a temple, having an entrance ornamented with the legend of Alexander. The mummies were in this case taken up in the same manner as in the preceding. They were wrapped up in dozens, in linen, well embalmed, and placed on clean matting. They were much reduced in size. There were mummies of dogs also in as great quantity as those of the cats.

Ancient Cubits of Egypt (abstracted from a Letter of M. Jomard to M. Abel Remusat.)—There exists in each of the respective museums at Paris (the Louvre), and at Turin, an ancient Egyptian cubit measure, each found at Memphis, by M. Drovetti. The material of both is a hard heavy brown wood, called wood of Meroé. The total length of the cubit at Paris is 523 millimètres, (1 foot 8.59051 inches,) that of the Turin measure somewhat exceeds 523 millimètres and a half, (1 foot 8.610195 inches.) Both are divided into twenty eight parts or nails. These are numbered from right to left, with the hieroglyphic signs 2, 3, 4, 5, 6, and so on to 16, so that the number sixteen is in the fifteenth compartment, counting from the right. The divisions are marked in a very perfect manner by a white composition, very skilfully incrusted on the wood; the same is the case with all the signs. This work is very remarkable, and shows the ability with which the wood was worked and cut; for the dimensions of each mark of division is about half a millimètre (0.019685 inches), and the instrument contains lines much finer than these divisions. Both measures have divisions into palms; but these, as well as the divisions into nails, and their subdivisions, are unequal; they are marked obliquely, not perpendicularly. The subdivisions of the nails correspond with the number engraved; thus the first compartment has two divisions; the second has three, the third four, and so on to sixteen. The figures therefore denote fractional numbers, or the denominators of the corresponding fractions. In the Louvre cubit, the oval sign which accompanies the figures, is placed to their right; in that at Turin it is placed above them, which comes to the same thing. After the fifteenth nail, the Paris measure has no further divisions, while in that at Turin, the sign which marks the cubit, occupies the thirteen remaining compartments, with the figures III, II, and IIII, repeated several times. In the former, however, there are marked throughout the whole width of the rule, and by small peculiar marks, spaces equal to a nail, to four nails or a palm, to two nails or a condyle, and even to three nails. The cubit at Paris M. Jomard considers as one of the most interesting, if not the most precious, of all relics of the kind existing, although it has a small slit at one end, and wants about twenty characters on the lateral face, the effect of the tearing off a splinter of the wood.

M. Jomard concludes that these measures were the real effective measures in use, and not mere dedicatory, commemorative, or votive monuments; that the measure made use of at Memphis was one of 523½ millimètres or thereabouts; but that this had succeeded to a former measure, shorter and more

nearly corresponding with the natural cubit of 24 nails or 6 palms, which agrees with the most ancient definition of the measure of Egypt—that furnished by Herodotus. It is remarked by M. Jomard, that the base of the second pyramid measures an exact number, 400, of cubits of 28 nails. It is further observed by him, that no measure engraved on metal has been yet found in Egypt. The five or six measures known are either in wood or stone. Did they not, he asks, intend to avoid the effects of expansion and contraction?

New Discoveries at Herculaneum.—The workmen at Herculaneum have been engaged in uncovering a magnificent dwelling-house, the garden of which, surrounded with colonnades, is the largest that has yet been discovered. Among other mythological subjects, painted on the walls, are the following:—Perseus, aided by Minerva, killing Medusa; Mercury throwing Argus into a sleep in order to carry off Io, a subject exceedingly rare in the monuments of art; Jason, the Dragons, and the three Hesperides. Greater curiosities still are some bas-reliefs of silver, representing Apollo and Diana, fixed on elliptical tablets of bronze. These paintings, however, and all other ancient specimens of the art yet discovered, are represented to be surpassed by those found on the walls of a house recently excavated at Pompeii, in the quarter in which the work of exploring is now carried on, and which is said to be the finest part of the city yet laid open. The following compositions are noticed, among others, as in first-rate style:—Medea meditating the murder of her children; the family of Niobe assailed by Apollo and Diana; divers representations of Deities; Bacchantes of great beauty; Achilles drawing his sword on Agamemnon; and a variety of other subjects.—*French Journal.*

Ancient Lighthouses.—The lighthouse of Pharos, Alexandria, mentioned by Ben-edris, who stated its height at 300 cubits, existed in the thirteenth century, in the time of Abulfeda. Pliny reports that the construction of it cost eight hundred talents, under the direction of Sostrates, architect of Gnidus. It is situated longitude 27° 35′ 50″ and latitude 31° 13′ 15″. According to Lesches, who lived in the thirtieth Olympiad, the tower of the promontory of Sigæus served as a lighthouse. The Colossus of Rhodes, the work of Phares, served for a lighthouse during the fifty-five years assigned by Pliny to its duration; it held an enormous lighted flambeau. The remains of the Colossus, purchased of the Saracens by a Jew in 651, amounted, in weight, to nine hundred camel loads, estimated at 720,000lbs. The Tower of Hercules, at Corunna, is a lighthouse of very ancient origin, repaired by Trajan or Cæsar. A fire of coal is made in it every night, but this light is very insufficient. The lighthouse of Boulogne-sur-Mer, erected by Caligula, and repaired by Charlemagne, fell down on the 29th July, 1644, by the effect of the mines which the English had worked under it. The Tower of Curdouan, at the mouth of the Garonne, dates its origin in the year 830. It was repaired under Henry IV. and Louis XIV.

Copy of the Buddhist Code.—Sir Alexander Johnston gave the Royal Asiatic Society, some time ago, a complete copy of the Pali book, called the *Pansyapanas Jatakay*, written on 1172 laminæ of the finest description of the Talipot palm leaf. This book contains the whole moral and religious code of the Buddhist, and is so scarce, that it was for some time believed that there was no complete copy extant. Sir Alexander Johnston, when president of his Majesty's council in Ceylon, being, from the various benefits he had conferred on the priests of Buddhoo and their followers, much in their confidence, was allowed by them to have this complete copy taken of all the different parts of it, which were dispersed amongst the most celebrated temples in Ceylon. Sir Alexander also gave the Asiatic Society a very fine specimen of a Burmese book on the Buddhoo religion, written upon laminæ of this leaf, which are beautifully lacquered and gilt over,

which was sent to him by the King of Ava, along with some other books, as the finest specimens he could give him of the manner in which the books were written and bound in his library at Ava.—*Gardener's Magazine.*

§ 10. General Literature and Education.

Classification of European Languages.—The following is a classification of the European languages, divided into *families*, according to Maltebrun, Balbi, and De Mancy, which we extract from the *Atlas Historique et Chronologique des Littératures Anciennes et Modernes*, just published at Paris by the last mentioned author.

The families are six: the Iberian, the Celtic, the Germanic, the Pelasgian, or Græco-Latin, the Sclavonian, and the Uralian. Each of these embraces those languages, which are evidently derived from one common source:—

The Iberian languages were those formerly spoken by the people of Spain at the time of the Roman conquest; and the only remaining one is the Basque, which is a written language, and spoken in the provinces of Biscay, Navarre, and Bearn, and is considered one of the oldest in the world.

Of the Celtic, which was formerly spoken in the Gauls, in the islands of Britain, and in parts of Spain and of Italy, the now surviving branches are the Gaelic, the Erse, the Mansk, the Cimri or Welsh, the Cornish, and the *Breyzard*, which is spoken in Britanny.

The Germanic family is very numerous, and it divides into four great branches: 1. The *Teutonic*, which is subdivided into old German, or the language of the *Minnesingern;* and modern German, with its various dialects. 2. The *Cimbric*, which comprises the old Saxon and Longobard idioms, which were spoken in all the north of Germany; and the modern Saxon (distinguished from the German or Teutonic Saxon, which is the purest dialect of the German language), which is spoken in Holstein, Mecklenburg, Hanover, Bremen, Westphalia, &c.; and, lastly, the *Neerlandish*, or modern Batavian, which is divided into Flemish and Dutch or Hollander. 3. The Scandinavian languages, which were once spoken by the Goths, and Vandals, the Burgundians, and the Normans, are now the Icelandic, Norwegian, Swedish, Norse, Danish, and the modern Gothic, which is still spoken in Scania and other parts of Sweden. 4. The last branch of the great German family is the Anglo-Britannic, and it includes the old Anglo-Saxon, the present English, the Lowland Scotch, and the Northumbrian, mixed with Danish words.

The Pelasgian, or *Traco-pelasgian* family, reckons four ancient languages: the old Illyrian, which is now lost, unless the modern Albanian be considered as a relic of it; the Hetruscan, which was once spoken over a great part of Italy, and became extinct under the Cæsars; the Hellenic or Greek, with its dialects, of which the modern Greek or Romaic is one; and, lastly, the *Italic*, including the idioms of the Latins, Sabines, and Samnites, out of which was formed the Latin, by an admixture of Æolic and Doric. The Latin became early distinguished into written or literary, which was spoken by the educated; and rustic or plebeian, which last, in after centuries, gave rise to the *Romance*, or language of the Troubadours, formed, after the fall of the Empire, in the southern provinces of Europe, where it is still partially spoken.

The five modern Græco-Latin languages, which are also classed in the Pelasgian family, are the Italian, the French, the Castilian, the Portuguese, and the Walachian. The last mentioned is the language of the reputed descendants of the Roman colonies settled in Dacia and in Thrace, who became mixed afterwards with the Sclavonians and other people, and it still bears a great affinity to Latin. It is spoken in Walachia, Moldavia, part of Hungary and Transylvania, and by the Walachians scattered over the Ottoman provinces south of the Danube.

The family of the Sclavonian tongues includes the numerous languages spoken from the shores of the Adriatic to those of the Frozen Sea, and as far as the eastern extremity of Asia. Such are, first, the Russian, which is divided into ancient and modern; second, the Servian, which is considered to be the purest dialect of the Sclavonian; third, the Croatian, or modern Illyrian; fourth, the *Rusniak*, which is spoken in the Polish provinces of Volhynia and Podolia, and part of Gallitzia; fifth, the *Windisch*, spoken in the Austrian provinces of Carniola, Carinthia, and Styria; sixth, the Bohemian; seventh, the Polish; eighth, the *Slowack*, which is used by the Sclavonians of Hungary; ninth, the Swabian, spoken in Lusatia, and which has borrowed considerably from the German; tenth, the Lithuanian, which is spoken in the provinces of the former duchy of Lithuania, now annexed to Russia; and, lastly, eleventh, the *Lettwa*, or language of the ancient Lettons, which is still spoken in Courland and Semigallia. All these languages have grammars; and some of them, such as the Russian, the Bohemian, the Polish, are rich in literary productions.

The sixth and last family, is that of the Uralian or Finnish languages, and may be considered as half Asiatic. The idioms, now extinct, of the Huns, the Bulgarians, and other Scythian tribes, belonged to it. Among the existing languages, it reckons the Finnish or language of Finland, and its dialects the Laplandish and the Esthonian; the Wolgaic or *Tcheremis*, which is spoken at Kasan, and along the banks of the Wolga; the Permian, which is spoken in the Russian government of that name; and, lastly, the Hungarian or Magyar, which has lately attracted considerable attention among the learned.

State of Civilization in Walachia.—The Walachians are not altogether devoid of mental cultivation; they are moreover of quick intellect, have a propensity for satire, and a lively imagination; but effeminacy and sensuality arrest in its early stages all progress towards amelioration. Bucharest and Bouzea possessed seminaries; but these have been given up, under the present disastrous state of the country. A printing-office, established by Karatab and Co., ceased to work after the first year. The household of the Archbishop has a printing establishment attached to it; but from this, spiritual works only are issued. In the last war between the Russians and Turks, a desire arose to procure better education for the youth of the country; and since then, many young men, and even children, have been sent to Vienna, Padua, Pisa, and Pavia. This, however, has had little influence on the civilization in general; for it is no uncommon thing to see a Walachian youth, returned from foreign countries with some little knowledge, forgetting immediately whatever he had learnt. All persons of the two upper classes of Walachians are taught, in tender age, to speak modern Greek; and some are to be found conversant with ancient Greek. A college, indeed, has been founded in Bucharest, and is referred to by most writers as a proof of progress towards civilization under the Greek governors; but the professors themselves prove the inutility of the institution; for although several Phanariot Greeks may exert themselves in the cause, and use their endeavours to advance and promote knowledge, the Walachians themselves are void of all feelings of the kind. A few of the priesthood, and other teachers who have the good of the people at heart, have here and there established small schools, in which they teach children reading and church singing; but that is the extent of their efforts, in the absence of all support and encouragement from the government. The men would be in general well made, but they have nearly all crooked legs, the consequence of their habit of sitting with their legs doubled. The women are mostly of noble presence, and have features as regular, and eyes as brilliant, as the Greeks; while in society they are much more amiable. The higher and middle classes dress

in the European style, and have their finery sent from Paris and Vienna. The girls are taught to speak French and modern Greek, to play a little on the piano or guitar, and to dance the mazourka, a Polish national dance. All Walachians, without exception, profess the Greek religion, without, however, being very strict observers of the usages of the church.—*Hesperus.*

Discovery of the Golden Bull of King Andrew II.—The librarian, Herr von Tejer, while examining divers archives to aid him in preparing his *Diplomatorium Universale Regni Hungariæ*, about to be published, discovered in the Primatial Archives of Gran an authentic original of the celebrated Bulla Aurea of King Andrew II., the Jerusalemite, of the date of 1222, and took a copy of it for his Diplomatorium. The existence of an original Aurea Bulla was not before known. It was notorious that, under Andrew II., seven authenticated originals of this Bull were deposited in various archives of the kingdom; but, with the lapse of time, all record of them had been lost, and the world was content with the copy found in the Episcopal Archives of Agram, (Transumtum Zagrabiense) which was the oldest. The celebrated Kollur entertained hopes of finding an authentic original in the state archives of Vienna, but he was disappointed. Martin Georg von Kovachich offered a reward of two hundred ducats for the finding of an original of the Bulla Aurea, with its golden seal, and of one hundred ducats for an original without such seal, but none was ever found. That now discovered has three seals, the fourth (the golden one) is still wanting. There are, however, clear indications that it once existed.—*Allgemeine Literatur Zeitung.*

Timbuctoo—African Travellers—Letter of Mr. Barrow.—In consequence of an expression in a letter from the French Consul at Tangiers, announcing the arrival of M. Caillé, that "he was the only European who had terminated happily an undertaking in which so many courageous travellers had perished," Mr. Barrow, Under Secretary to the British Admiralty, anxious that justice should be done to the memory of Major Laing, addressed a letter, of the date of the 28th October, 1828, to M. Jomard, President of the Central Bureau of the Geographical Society at Paris, reminding him that Major Laing was the first European who had set foot in the African city: a fact proved by a letter, in the handwriting of the Major, addressed to Mr. Warrington, English Consul at Tripoli, and dated the 21st of September, 1826; in which, besides relating that he had arrived in that city on the 18th of the preceding August, and intended to quit it on the following day, the 22d of September, gives several details respecting Timbuctoo. Mr. Barrow continues by reporting the substance of the account given by Major Laing's servant, that his master quitted Timbuctoo on the 22d of September, with a small caravan, and with only one Arab domestic; that on the third evening he was joined by some Arabs, forming part of the caravan, and afterwards basely murdered, his baggage was plundered, and his journal and papers carried off; but there are hopes, Mr. Barrow says, that these may be recovered. M. Jomard, in reply, explained that the phrase, "happy termination," in the letter of the consul, related merely to the fortunate return of M. Caillé to his country, and not to his discovery of Timbuctoo, and expresses every readiness to do justice to the devotion and success of Major Laing.

In reference to this subject, and the undertaking in which the Geographical Society of Paris are engaged, of publishing the details furnished by M. Caillé, the Gazette de Bayonne calls to mind the work of D. Martin Fernandez de Navarrete, which establishes that the Spaniards were the first to explore the shores of Africa as far as the Golden River; secondly, the description of Africa, written by Juan Leon, African, published by Ramusius, in his collection of Travels, vol. i. p. 78, which makes particular mention of buildings erected in the same city of Timbuctoo, near a branch of the river Niger, in

the year of the Hegira 610 (1213 of the Christian æra), by a skilful architect of Grenada, who also built a palace for the king of that part of Spain; and in which it is said, that in Timbuctoo there were many shops of artisans and merchants, and great quantity of woollen and linen goods of Europe, brought thither by the merchants of Barbary; thirdly, the description of Africa by the Spaniard, Luis del Marmol, full of particulars relating to the interior of that country, now unknown.

Manuscript Bible.—M. de Speyer Passavant, of Basle, has just brought to Paris a manuscript Bible, one of the most precious monuments of paleography in existence. One of the miniatures with which it is illustrated represents Alcuin offering the manuscript to Charlemagne, yet only king, and not emperor, as he only bears the royal bâton. It is more especially valuable by its seals, its tyronian characters, and for being the only manuscript which contains the complete text of the epigrams of Alcuin. The Academy of Inscriptions admitted M. de Speyer to one of its sittings, to congratulate him on the possession of so great a treasure.—*Faret de Londres.*

German Annual at Rome.—A German annual, under the title of 'Pocket Book for Italy and Greece,' 1829, edited by Wilhelm Waiblinger, appeared in Rome, for the first time, at the end of the last year. The Stuttgard periodical, the 'Morgenblatt,' remarks a want of system in the plates, which it seems in general are not so good as might have been expected in a production issuing from Rome. At the same time, it extols the frontispiece as a plate of great beauty. This is the portrait of a girl of Gensano, engraved by Grahl, from a picture painted by him of the size of life, and which attracted universal attention at the exhibition of the works of German artists in Rome, in 1827, made under the auspices of the King of Bavaria. The letter-press is wholly furnished by the Editor, before known as the author of 'Phaëton,' a poem, and of several Greek tales. Among other articles mentioned as included in the pocket book, is the tale of an English family, who ascend St. Peter's, in order to drink their tea on the cupola, and who get into all sorts of scrapes. The reviewer praises this as an excellent article, and full of humour, although the English, he says, are somewhat too severely caricatured.

§ 11. Naval and Military Estimates.

Army of the Haitian Republic.—The military force of Haiti consists of regular army, or national guards paid; and militia, or unpaid national guards. The President is the commander-in-chief of the whole national force, which is by law essentially and implicitly obedient, without deliberative powers. The commander-in-chief has under him sixteen aides-de-camp of various ranks. The staff of the regular army is composed of eleven generals of division, and eighteen generals of brigade.

The President has a guard consisting of two regiments of infantry, of which one is of grenadiers, the other of light troops; and three of cavalry, of which one is of carbineers, one of grenadiers, and one of light cavalry. These regiments are of the same strength and composition as those of the line.

The line is composed of thirty-three regiments of infantry, each of two battalions; the battalion of six companies, viz. one of grenadiers of eighty men, one of sharp-shooters of fifty men, and four of fusileers of forty-four men. Each regiment has an adjutant-major, a doctor, a drum-major, and fifteen musicians.

Of cavalry, there are only two regiments of dragoons, of two squadrons each: the squadron consisting of two companies of seventy-two men strong, including officers.

The artillery is formed of five regiments, of two battalions each; each battalion of nine companies of fifty men each, including three officers; and of five companies of labourers, each fifty men.

The corps of engineers consists of a colonel-inspector, two chiefs of battalions, eight captains, sixteen lieutenants, and a certain number of cadets of the rank of serjeant-major; besides twenty-six companies of pioneers of fifty men, including officers.

The total of the army of the line on the peace establishment is 26,600; exclusive of the staff and President's guard, it amounts to 24,896.

The militia, or national guard, properly so called, consists only of infantry and cavalry: it is composed in every commune of companies of infantry, varying in number; and of at least one company of cavalry; the companies of fifty-five men, officers included. There are, moreover, companies *d'élite*, formed of officers of every rank, retired from the service, but not invalided. These march, on all occasions, at the head of the national guard. The superior officers are appointed by the President of the Republic; the rest, as well as the subalterns, are chosen by the respective companies. Every male inhabitant of Haiti, between the age of fifteen and sixty years, is obliged to enrol himself in the national guard of the commune to which he belongs.

Besides the regular army and national guard, there are six legions of horse gendarmes, each legion taking the name of the department to which it is attached. Besides the duties of high police and execution of the sentences of the tribunals, the gendarmerie is also charged with the conveyance of the government and public despatches. Four of these legions are of twelve companies of fifty men, including officers; the others have only eight companies. To be a gendarme, it is required to have served three years in the regular army, and to be of irreproachable character.—*Almanach National de Haiti.*

Navy of the Republic of Haiti.—The navy of Haiti consists merely in a few gun-boats as coast-guards. The officers, as given in the National Almanac of 1828, consisted of one Rear Admiral, nine Captains of coast-guards of the first class with the rank of Colonels; nine of the second class with the rank of Commanders of battalions; thirteen Lieutenants with the rank of Captain; seventeen Ensigns of vessels with the rank of Lieutenants, and nineteen Midshipmen with the rank of Sub-Lieutenants.

The principal ports open to foreign commerce have a chief harbour-master and deputy; the secondary ports a chief harbour-master only. The principal ports are Port-au-Prince, Les Cayes, Jaunel, Jeremy, Cape Haitien, Les Gonaives, and St. Domingo; the secondary ports are Port Plate and Samana. The administration of the marine is in charge of a superintendent of the fleet and six victualling officers.

Expensive Staff of the French Army.—The expensive footing on which the staff of the French army is established, is the subject of great complaint with the economists of the Chamber of Deputies. On a comparison of the expenses of the army of the year 1812 with those of 1826, it appears that at the former period, the cost of the army, including the staff, did not amount to more than 110,523,596 francs, while at the latter, the maintenance of 226,058 men exceeded 114,435,059 francs, yet the pay of individuals had not been augmented between the two periods. The great disproportion is therefore attributed to too numerous a staff, and other extravagances.—*Bull. Univ.*

Swiss Troops in France.—A great source of dissatisfaction and jealousy to the French people are the employ of Swiss troops, and the difference existing between their pay and treatment, and those of the native army. The Swiss in the pay of the French government are two regiments of guards, and four of the line. Each Swiss regiment of guards at Paris costs 288,000 francs; the expenses of a French regiment are only 188,000 francs. A Swiss Colonel of the guard receives 15,000 francs, and a French Colonel 6250. It is to be observed however, that a Swiss regiment is 2231 men strong, while the French regiments do not muster more than 1700.

The Swiss officers of the guard are entitled to rank one step above their actual grade, and to a pension on retiring, one degree above their rank. Those of the line have a retiring pension one-third greater than that to which French officers are entitled. In case of discharge, the officers, subalterns, and soldiers (Swiss) receive a gratification of three months' pay, and are entitled to half-pay. The Swiss in the pay of France are eligible to all honours civil or military, and yet they are exempt from duty in garrisons or on board ship.—*Ibid.*

The Cossacks of the Ural.—In 15,000 men, which compose the mass of the Ural Cossacks, are 5500 capable of service, inscribed as such on the war-rolls, and who have the right to fish in the Ural, for which they are bound to lend their services in war, and to present themselves when required. Eighteen years is the age at which the Ural Cossack is so enrolled. Generally speaking, the number in actual service is 3000 men. Whenever required, however, the province is under the obligation of furnishing ten regiments of 500 men each, in which case also about 500 enrolled Cossacks remain behind to observe the frontier lines. As soon as a regiment or a certain number are required, the number to be furnished is divided among the whole mass capable of service, and the quotient shows the number of men liable to serve, on whom it devolves to furnish a mounted Cossack.

§ 12. Geography, Statistics, and Public Economy.

Climate of Walachia.—The soil of Walachia may be said, speaking generally, to be fertile. In the vicinity of the mountains the climate is healthy and bracing; but near the Danube, on account of the exhalations from the marshes formed by the frequent inundations, it is damp. The cause of the fevers so constantly prevailing in those parts, however, must be sought less in the climate than in the immoderate use of unripe fruit.—*Hesperus.*

Difference in male and female Civilization in Russia.—A remarkable difference in respect to civilization of manners and enlightenment between the two sexes is observable in the Russian province of Uralsk. The men attain a passable state of cultivation, through the opportunities afforded them by the wars of seeing foreign countries, manners, and usages. This effect is still more certainly produced by the wise regulation which orders the distribution of the regiments through the different parts of the kingdom, and constantly retains a hundred men from each in the capital of the empire, changing them every year. In the mean time, the women cling pertinaciously to all their ancient customs.—*Evermann's Reise.*

Land Trade between Russia and China.—The commerce carried on on the frontiers of China and Russia is a traffic of pure barter, and is conducted with the greatest mistrust on both sides. The Chinese merchant first pays his visits to the Russian warehouses at Kiachta, selects the goods which he has need of, and then repairs to the horse of the owner, where, over a cup of tea, the price is settled between the parties. This negotiation concluded, both buyer and seller return to the magazine, put a seal on the wares contracted for, and adjourn to the Maimotselun, where the Russian, in his turn, chooses the articles he is in want of. Both parties are extremely particular in ascertaining both the weight and the quality of the merchandize.—*Ansichten über den Landhandel durch Asien nach Russland,* 1828.

Comparative Statistics.—In a new table recently published by the indefatigable M. Balbi, entitled the *French Monarchy compared with the other principal States of the Globe,* are given the following curious comparative calculations:—

Proportion of Revenue to Population.

	Every inhabitant.
Great Britain	£2 12 0
France	1
Netherlands	1 0
Prussia	0 13
United States of America	0 9
Austria	0 8
Russia	0 4

Proportion of Debt to Population.

	Every inhabitant.
Great Britain	£34 15 2¼
Netherlands	25 12 0
France	5 16 0
Austria	1 16 0
United States	1 7 2¼
Prussia	1 3 2¼
Russia	0 16 9¾

Proportion of the Army to the Population.

	One soldier to	
Russia	57	inhabitants.
Prussia	80	
Austria	118	
France	138	
Netherlands	142	
Great Britain	229	
United States	1977	

Porportion of the Fleet to the Population.

	Vessels of the line and frigates 1	
Great Britain	to 82,979	inhabitants.
Sweden and Norway	154,640	
Netherlands	170,556	
France	290,909	
United States	316,000	
Russia	686,250	
Austria	2,909,091	

Proportion of Representation to Population.

Norway has	75 deputies,	or 1	to every	14,000 inhabitants.
Great Britain	658 —	or 1	—	35,455
The Netherlands	110 —	or 1	—	55,845
The United States	187 —	or 1	—	60,129
France	430 —	or 1	—	74,118

Population of Naples.—In the year 1824 the population of Naples, as to the provinces on this side the Faro, was 5,386,040 souls. The soil of the kingdom was divided amongst 1,338,997 land-proprietors. The rest of the population was distributed as follows:—secular clergy, 27,612; monks, 8455; nuns, 8155; cultivators of land, 1,475,314; herdsmen and shepherds, 65,226; artisans, 182,707; persons in trade, 10,957.

In the year 1734, at the conquest by Charles III., the population amounted to 3,044,562; in 1765, it was 3,953,098; in 1773, 4,249,430; in 1791, 4,925,381; in 1805, 4,988,679; in 1814, 4,956,693; and in 1819, 5,034,191. In the year 1824 the capital contained 349,190 inhabitants. Of these the male population was 165,015; the female, 184,175. The males under fourteen years, 55,283; females under twelve, 51,957. Living in celibacy, men 45,853, women 56,172; married, 115,034: widowers, 6352; widows, 18,529. Distributed, according to their calling, as follows: secular clergy, 1751; monks, 610; nuns, 827; pensionaries—military, 6300, clergy, 7600, officers of state, &c. 2000, by especial grace of the King, 2000; persons in office, civil list, 8960; military, on civil list, 490; officers of public tribunals, 1627; poor in different degrees of destitution, 7867; artisans, tradesmen, &c. 114,519.—*Das Ausland.*

Population of Denmark.—The population of the Danish dominions at the close of the year 1827 was as follows:—

In the old Danish Provinces	1,521,278 souls.
Holstein	374,745
Lauenburg	35,680
Iceland	49,826
The Faro Isles and Greenland	11,240
The West Indies	46,690
	2,039,459

Add to these, the subjects of Denmark in Guinea and the East Indies, and the whole population is about 2,100,000. Copenhagen contains 104,674 inhabitants. The clergy in Denmark consists of 1600 individuals, including those of Iceland, the Faro Isles, and the Colonies, above 1900.—*Das Ausland.*

Deaths of eminent Persons in France in 1828.—In the year 1828 there died, in France, thirteen Peers of France, among whom, one Field-Marshal, five Lieutenant-Generals, and one Archbishop; twenty-eight Lieutenant-Generals (five, as above, of the Chamber of Peers), twenty-five Brigadier-Generals, two Archbishops, and a Constitutional Bishop; five Rear-Admirals, fifteen Deputies, twelve ancient Deputies, or Members of the Legislative Assembly; eighteen Presidents or Vice-Presidents of Tribunals, four Procureurs-Généralş, nineteen Judges, six Members of the Court of Requests, four Prefects or ancient Prefects, six Members of the Institute, three Advocates, ten painters, two sculptors, one engraver, three architects, eight doctors, fifteen authors (of whom seven dramatic), two composers of music, six actors, two actresses, and two principal dancers.

Bettering the Condition of the Labouring Poor.—As a plan for reducing the poor-rate, and restoring the independence of the labourer, by placing him in a condition to maintain himself and family without parochial assistance, and, consequently, in comparative comfort, Captain J. Pole, R.N., recommends the letting every labourer, who wishes it, have a piece of land for the employment of his leisure hours, to raise such vegetables as himself and family require. This plan is stated to have been attended with the best effects in various places. Captain Pole has entered into calculations, that a labourer who costs the parish 11*l.* 14*s.* per annum, may be kept off it by paying for him, or giving him an opportunity of paying himself, a rent of 3*l.* for land. The principal difficulty in commencing such a system, is the unwillingness of old tenants to have their fields dismembered for the purpose. In new inclosures, or where landlords are disposed to throw some of their fields into allotments for the poor, the project is an easy and doubtless a beneficial one for both the poor and the parish; and as the system is not intended to be compulsory, either on parishes or individuals, in accepting or rejecting it, the measure may be more palatable, as involving no change of laws or ancient usages.—*Gard. Mag.*

Wines of France.—The following are the duties to which the wines of France, white or red, are subject, in various foreign countries:—In Sweden, 400 francs the pipe; in Norway, 200 francs; in Prussia, 520 francs; in Russia, 750 francs; in England, 1200 francs; in the United States, 189 francs 90 cents. Previous to 1789, the annual exportation of wines from Bourdeaux amounted to about 100,000 pipes. The trade has greatly diminished since that period. The following is the amount of the annual exportations since 1819, as stated in a petition of the wine growers, to the Chamber of Deputies, in the last Session:—

1820.....61,110 pipes	1821.....63,224 pipes
1822.....39,955	1823.....51,529
1824.....39,625	1825.....46,324
1826.....48,464	1827.....54,492

The documents laid before the Chambers by the Ministry, state the average value of the three years, 1787-8-9, at 32,000,000 francs wine, and 17,000,000 francs brandy: the mean value of the exportation for 1825-26-27, at 48,000,000 francs in wine, and 20,000,000 francs in brandy. In 1789 the land occupied in the production of wine was computed at 1,200,000 hectares (2,880,000 acres), producing something above 20 million hectolitres (440,000,000 gallons). The land at present in culture with vines is esti-

mated at 1,729,000 hectares (3,499,200 acres), yielding 46 million hectolitres (880,000,000 gallons), and giving a value of 600,000,000 francs (24,000,000*l.*) The general duties yield a total produce of 100 millions (4,000,000*l.*); the local or municipal duties, 20,000,000 francs (800,000*l.*); amounting, together, to a charge on the entire produce of more than 20 per cent. According to M. Dupin, the expense of levying the indirect duties amount to the exorbitant sum of 20,800,000 francs on a revenue of 136 millions; while, in England, the expense of collection of similar duties does not exceed seven millions in 138.—*Bull. Univ.*

Supplies of Wheat.—Dantzic is the quarter whence the principal supplies of Wheat have been derived. The shipment made till the close of the year, to Great Britain, consisted of

	Wheat. Lasts.	*Rye.* Lasts.	*Oats.* Lasts	*Barley.* Lasts.	*Peas.* Lasts.
London . . .	1501	596	200	155	133
Liverpool . .	141	...	...	8	28
Bristol . . .	95	...	...	...	...
Ports on the East Coast	4253	609	2	300	76
Jersey and Guernsey	2095	50	59	58	
Loading for sundry places at the close of the year	2671				
	24266	1255	270	521	237
To France . . .	5045			...	
Holland . . .	4279	1527		17	
Newfoundland . .	58			...	
Hamburgh, Bremen, &c.	240	713		12	
	33888	3495	270	550	245

The stocks in granary in Dantzic had not been ascertained by last advices, but they are estimated as follows, viz.

Wheat. Lasts.	*Rye.* Lasts.	*Oats.* Lasts.	*Barley.* Lasts	*Peas.* Lasts.
7000	1000	600	600	100

Quar. Jour. of Agric.

Prospect of Advance in the Price of Corn.—The opinion in favour of a further advance in spring in the price of all sorts of corn, is in some degree founded on the fact of the comparatively small arrivals, coastwise, of British corn compared with those of former years. In taking an abstract of the arrivals of wheat coastwise into London for the last eight weeks of each of the seven years ending 1827, and comparing the average with the arrivals for the corresponding period of last year, it is found that the average weekly arrival for the seven years, ending with 1827, in the months of November and December, was 7920 quarters, while, for the same period in 1828, it was only 4235 quarters, making a weekly deficiency of 3685 quarters; and the weekly arrival is gradually so diminishing that it has latterly not reached much above 900 quarters. This is a very remarkable fact, and seems of itself to indicate that the deficiency of last crop was very great; and such as great economy, and the liberal use of substitutes, and all the arrivals from other countries, will hardly counterbalance.—*Quar. Jour. of Agric.*

MONTHLY METEOROLOGICAL JOURNAL,

From January 21, 1828, *to February* 20, 1829.

51° 32′ 30″ N. 8′ 30″ W.

Jan. and Feb.	Lunations.	Thermometer. Mean Alt.	Barometer. 0 hour.	Winds. A.M.	Winds. P.M.	Atmospheric Variations. 9 h. A.M.	0 hour.	8 h. P.M.	During Night.	Prevailing Modification of Cloud.
21		21	29.70	N.E.	N.E.	Snow.	Snow	Fair	Fair	Cirrostratus.
22		23.5	.47	E.	E.	Fair	Clear	Clear	—	—
23		21.5	.30	—	N.E.	—	Snow	Snow	Snow	—
24		22	.27	N.W.	N.W.	—	—	Fair	Fair	—
25		21.5	.31	S.W.	S.W.	Fog	Fog	Fog	—	Cirrus. Cirrostr
26		37	28.68	—	—	Moist	Fair	Moist	Moist	—
27	h. 6 59 AM. ☾	38	.69	—	—	Fair, Cl.	—	Fair, Cl.	Fair	Cirrostr. Cirroc.
28		36.5	29.04	N.W.	N.W.	—	—	—	—	— Cumulos.
29		35.5	.25	N.E.	N.E.	—	—	—	—	Cymoid Cirrostr
30		31	.21	—	N.	—	—	—	—	Cirrostr. Cum.
31		34.5	.90	—	N.E.	—	—	—	—	—
1		33.75	30.30	S E.	E.	—	—	—	Frost	— Cumulus
2		21.5	.45	S.W.	S.W.	Fog	Clear	Clear	Fr.	Cirrus. Cirrostr
3	h. 2 12 AM. ●	24.5	.45	N.E.	—	—	Serene	—	Fair	—
4		35.5	.41	S.W.	W.	Fog	Rain	Rain	Moist	—
5		40.5	.11	N.E.	N.E.	Fair, Cl	Fair, Cl.	Fair, Cl.	M.	—
6		42.5	.18	S.W.	N.W.	Moist	Moist	—	Fair	—
7		43	.10	N.W.	N.W.	—	—	Rain	Fair	—
8		37	.20	N.E.	N.	Fair, Cl	Fair, Cl.	Fair, Cl.	—	Cirrostr. Cum.
9	h. 6 54 PM. ☽	38.5	.28	N.W.	N.	—	—	—	—	—
10		37.75	.30	N.	N.	—	—	—	—	—
11		43	.30	N.W.	N.W.	Wet	—	—	—	— Cumulos
12		43.5	.96	W.	W.	Fog	Moist	Moist	Moist	Cirrostratus.
13		44.5	.14	N.W.	N.W.	Moist	Fair, Cl	Fair, Cl.	Fair	—
14		43.5	.14	S.W.	W.	Fair, Cl.	—	—	—	Cymoid Cirrost.
15		41.5	.07	—	—	—	—	—	—	Cirrostratus.
16		44	29.91	—	—	—	—	Rain.	Moist	— Cumulus.
17	h. 2 6 PM. ○	41.5	.69	—	S.W.	—	—	Fair	Fair	Cirrostratus.
18		36	.66	S.E.	E.	—	—	—	—	—
19		38	.43	E.	S.	—	—	Clear	—	Cirrus. Cumulus
20		45.	.37	W.	S.W.	—	—	—	Rain	Nimbus. —

THE JOURNAL OF FACTS.

APRIL, 1829.

§ 1.—Natural Philosophy.

Supposed existence of active Molecules in Mineral Substances.—In a communication to the Magazine of 'Natural History,' Mr. Bakewell throws doubts on the supposed existence of active molecules in inorganic matter, as propounded by the eminent naturalist, Mr. Brown. With regard to these active molecules, though, in some instances, Mr. Bakewell was at first persuaded that he had seen the motions of the molecules similar to those of the smallest species of Infusoria, a more careful examination proved that he was mistaken, and that the motions were derived from causes that had not been properly appreciated. These motions Mr. Bakewell describes as arising generally from animalcules in the water used in the experiment, from external vibratory motion, very difficult to be guarded against, and the effects of which in London it is scarcely possible to avoid, and from currents of air, which the observer's breath is sufficient to produce. As to London dust, the whole of which Mr. Brown asserts is composed of active molecules, Mr. Bakewell says he is fully convinced that the activity of its particles in a drop of water, as well as when dancing in the sunbeam, is derived from external agitation. Mr. Bakewell, however, acknowledges the obligation which the philosophical world are under to Mr. Brown, for having directed the attention of naturalists to this subject; and further says, that 'about ten years ago, Mr. Bywater, an ingenious optician, now residing in Liverpool, was reported to have discovered moving animalcules in coal-ashes, pounded marble, and other mineral substances. Little interest was then excited by the supposed discovery; it required an eminent naturalist like Mr. Brown, whose merits are well known, and highly appreciated in his own country and on the continent, to direct public attention to statements so much at variance with our preconceived notions of matter. If, contrary to expectation, after all due caution in the observations, it should be finally established that mineral substances are composed of active molecules, what new views of nature will the discovery unfold! Beds of siliceous sand, like those on our Hampstead Heath, are only awaiting a further process of trituration, to be awakened into life by the torrent that shall bear them into the ocean; and the geologist, while he contemplates the organic remains of a former world embedded in solid rocks, must regard the rocks themselves as the parents of future living beings.' Mr. Brown's discovery is, that the ultimate particle he can obtain from all bodies, organic or inorganic, has inherent motion, like unto vital action. His ideas on the subject, with an account of the microscopical observations which led to them, are set forth in an unpublished pamphlet, a review of which may be found in the above-mentioned Magazine. Mr. Bakewell reports that, on repeated observations on several mineral and inorganic substances, he had not discovered any proper motion of the molecules, if the water had been recently boiled! he attributes the apparent motion in unboiled water to animalcules previously existing in the water.

Anti-convulsion System of Geology.—In a notice of a work entitled 'Lettres sur les Révolutions du Globe,' in the section of Natural Science of the 'Bulletin Universel,' the Baron de Ferussac repeats an opinion maintained by him on former occasions in the same Bulletin, that the present

state of the earth's surface in the geological point of view, is the last, or rather the most recent, of a series of successive and gradual modifications; that, in fact, there have not been any revolutions, properly so called, on the globe; but an uninterrupted succession of phenomena diminishing in importance with the course of time, as the energy of the causes on which they depended have become less; and the greater part of which still continue and are in a state of progression; but with less force, and on a more limited scale than heretofore. In a word, that the general laws of harmony have not been disturbed on our globe more than in any other part of the Universe; and that the explanation of geological phenomena, instead of being discoverable in a desolating theory of imaginary convulsion, is to be found in the natural consequences of the primitive state of the globe, and the necessary effects of the general laws to which matter is subjected. True it is, convulsions, violent ruptures of beds, their re-formation; the change of place of substances, the consequences of a certain anterior order of things, cannot be mistaken. But these effects are far from being the consequences of disturbances of the established order,—of deluges in fact. The Baron asserts that the whole history of the globe is contained in a few lines formerly published by him, in which he maintained that it was time for geologists to abandon the system of convulsions of nature and of cataclysms; to acknowledge the influence of natural causes, and of the order and permanence by which the universal planetary system is governed. The primitive volcanic fire and its consequences; the formation of waters by the condensation of gases; the sinking of their level in consequence of the infiltration effected in proportion to the refrigeration and to the thickening of the crust of the earth, and the diminution of the temperature on the surface of the globe—the effect of the same refrigeration, are the primary causes from which the explanation of the geological phenomena proceed, by a natural and easy concatenation.

Supposed Human Fossils.—A communication has been recently made to the Royal Academy of Sciences of Paris, by M. Cordier, on the part of M. Tournal, of Narbonne, of the result of an examination of the fossil contents of a cavern recently discovered near the small town of Bire, in the eastern part of the department of the Landes. M. Tournal reports that human bones are found buried among those of animals now extinct, in beds of black soil. The communication is referred to a committee of three Academicians. The fact that the fossils discovered are human is very doubtful, although M. Tournal is spoken of as a man versed in geological science.—*Le Globe.*

British Fossil Shells.—The last Number of the *Magazine of Natural History* contains a geological arrangement, in the form of a table, of the Fossil Shells found in this country. This table forms a catalogue of thirteen hundred fossil testacea, classed as *Simple Univalves, Simple Bivalves, Complicated Bivalves*, and *Multilocular Univalves*. It appears that the following series of Fossil Shells are known to English naturalists:—

Simple univalves	58	genera, which comprise	401 species.
Simple bivalves	62	- - -	583
Complicated bivalves	3	- - -	51
Multilocular univalves	12	- - -	230
	135		1265

The same article observes, that in treating on the order of arrangement of shells in the several formations, Mr. Parkinson was struck with the fact, that the shells of the most ancient formations exceed, in complexity of structure, those in the subsequent strata, and in our present seas. It is in this

early creation, also, he observed that those shells are found which possess "that complicated structure, very rarely found in the shells of this day, which enabled their inhabitants to rise and sink with them in the water." Of this latter class are the numerous race of many-chambered univalves, the Nautilites, the Ammonites, and Orthoceratites; and of the class of complicated bivalves are the Spirifers, and the genera Pentámerus and Productus.

The table fully corroborates the accuracy of Mr. Parkinson's observations in this respect. The framer of the table concludes his summary by laying down as a general rule, that the ancient formations are characterised by complicated shells, the middle series by bivalves, and the upper by simple univalves.

Mahomedan Astronomical Globes.—In a paper by Dr. Bernhard Dorn, describing the astronomical globe in the Museum of the Asiatic Society, read at a recent meeting of that society, and reported in the Literary Gazette, it was suggested as the opinion of Dr. Dorn, that the Mahomedan Arabs carried the knowledge of the science of astronomy into Persia, whence the Greeks obtained their knowledge of it. Dr. Dorn then observes, that there are only three Mahomedan astronomical globes known to be extant, all manufactured about the same period; the first was made in Egypt, 622 of the Hegira, and is at present in the museum of the late Cardinal Borgia, at Velletri; the second was manufactured at Maragha (the court of Halagon Khan), in A. H. 686, and belongs to the Astronomical Museum at Dresden, where it is deposited; the third was made at Moosul, in A. H. 674, and formed the subject of Dr. Dorn's essay.

Vibrations of the Pendulum.—At the meeting of the Royal Society on the 11th of March, a paper was read, detailing observations made by Captain Sabine, at the request of the Royal Society, on the vibrations of the pendulum in Mr. Browne's house, in London, in which Captain Kater's experiments were made, and in the Observatory at Greenwich. The first series of observations was made in Mr. Browne's house, from the 17th to the 20th of March inclusive, and gave as the mean result 859738·38 vibrations in a mean solar day. A corresponding series, made at Greenwich in May, gave as the mean 859738·93 vibrations; thus indicating an acceleration of 0·55 vibrations per diem. The difference of latitude and of height between the two stations would have led from theory, to the expectation of a total retardation of 0·38 vibrations in the same time. From a second set of observations at Greenwich, the diurnal acceleration appeared to be 0·52 vibrations. Taking the mean of this and the former result, it appears that the total amount of the discordance between theory and experiment is 0·91 vibrations per diem. The stations are conveniently situated for verifying the existence of this anomaly; and its magnitude is such as to preclude all uncertainty as to its existence.

Weather in 1828.—The mean temperature of last season is within a very small fraction of a degree of the temperature in the extremely hot and dry season of 1826; but the mean temperature for 1826, for the vegetating season, was about 2° higher than in 1828, during the same period; the high temperature that prevailed during the winter months of the last season will account for the approximation of the annual temperature for both years. The fall of rain in 1826 was only fourteen inches, the half of which fell during the vegetating season.

The fall of rain last year was near the ordinary average, and measured 28·26 inches, fourteen and a half of which fell from the 20th March to the 20th October, which accounts for the general luxuriance of the crops in this country.

The mercury, in the barometer, was highest on the 29th of October, being on that day 30° Fahr., it was lowest on the 21st March, being at 28·10. Fahr. The warmest day was on June 28; mean heat of that day 67° 5′, extreme heat 77°. The coldest day was on the 12th February; mean temperature of that day 32°, greatest cold 28°. The wind blew from the north-east, east, and south-east, 153 days; and from the north-west, west, and south-west, 213 days. The only loud gales of wind occurred on the 16th and 17th January from the east, on the 14th February from the east, on the 9th March from the west, on the 24th and 25th September from the west, on the 20th and 27th November from the west, and on the 7th December from the west.—*Mag. Nat. Hist.*

Comparative Temperature of Brussels and London:—

	Brussels.	London.		Brussels.	London.		Brussels.	London.		Brussels.	Lond.
Jan.	1. 34°	34.5°	Jan.	7. 28°	35.°	Jan.	13. 25°	34.5°	Jan.	19. 25°	23.5°
	2. 39	41.75		8. 29	31.5		14. 29	34.25		20. 21	23.5
	3. 38	37.5		9. 32	35.		15. 30	33.75		21. 24	21.
	4. 35	39.5		10. 30	34.		16. 11	22.5		22. 9	23.5
	5. 35	33.25		11. 22	30.		17. 20	27.		23. 8	21.5
	6. 29	31.5		12. 24	34.5		18. 23	24.75			

The temperature of London is given from our own meteorological tables.

Natural Production of Sulphuric Acid from Hydro-sulphuric Gas.—M. Egidi, druggist, of Ascoli, had observed in a spacious cavern, formed by nature in the district of Arquasanta, a violent disengagement of sulphuric hydrogene. This gas, in contact with atmospheric air, became gradually decomposed, and produced water and sulphur: the latter deposited on the sides of the cavern soon formed with its salifiable bases sulphites, and in the sequel, sulphates, principally sulphates of lime crystallised, and lastly sulphuric acid, running down the sides of the cavern, and carrying with it the lime and other oxides which it found in its passage. This is not the only example known of constant fermentation of sulphuric acid, the effect of the decomposition of hydro-sulphuric gas.—*Bull. Univ.*

Components of Sweet and Bitter.—Dr. W. Herschel has discovered, that the mixing of nitrate of silver with hypo-sulphate of soda, both remarkably bitter substances, produces the sweetest substance known; a proof how much we are in the dark as to the manner in which things affect our organ of taste. So, bitter and sweet, as well as sour, appear not to be an essential quality in the matter itself, but to depend on the proportion of the mixtures which compose it.

Advantages enjoyed by Men of Science in France.—The naturalists and other scientific men of Paris have great advantages over those of London. The French government devotes a large sum annually to the support of scientific and literary institutions in the metropolis. Public lectures on every subject may be attended gratis; the most complete museums and libraries are of the easiest access. The social meetings at the houses of distinguished individuals, or of public bodies, such, for example, as those of the Baron Cuvier, the Baron Ferussac, the Institute, the Athenæum, &c., are frequent; and the intercourse at such meetings is of real use to literary men, because difference of worldly circumstances enters into them for little or nothing. It is not to be wondered, therefore, that with superior native vivacity and acuteness, and all these opportunities, the French philosophers should be the first in the world.—*Mag. Nat. Hist.*

German Scientific Societies.—A society exists in Wurtemberg for the promotion of travels, having natural history for their object. Hitherto it has sent out only botanists, whose collections in Sardinia, Istria, Smyrna, Carinthia, &c., have given entire satisfaction to the shareholders. It is now

proposed to send out mineralogists, and M. Kurr has already departed for Scandinavia. The shares are fifteen florins; and, on the expiration of the voyage, the shareholder receives, according to his wishes, either specimens in botany or mineralogy.—*Foreign Review.*

§ 2. Natural History.

Man in France.—The conductor of the 'Magazine of Natural History' takes the following view of man in the north of France, on the point of 'Natural History.' 'The Frenchman of the northern provinces is, by nature, a superior animal to either the Englishman or the German; but by education, including the influence of government, religion, and the backward state of the useful arts, he is, at present, inferior to them. The cause of the natural superiority we consider to be principally the climate, and chiefly the superior purity and freedom from moisture of the air. This element is inhaled by us for what may be called its nutriment, during every moment of our existence, and its quality must, therefore, have an effect upon our constitution and character, so much greater than all the other elements of nutrition put together, that it is hardly possible for us to form an adequate idea of the full extent of its influence. The next powerful natural agent is temperature, and, we think, it may be very safely affirmed that of any two people, alike in respect to education and civilisation, those will be highest in the scale of excellence, who have been born, and who live, in the purest air and mildest climate. If agriculture and the useful arts, including government and religion, were as far advanced in France as in England, we think the Frenchman would be the superior character to the Englishman; and were the arts in France equal to the arts in England, and the state of education equal to what it is in Wurtemburg, we cannot avoid coming to the conclusion that the Frenchman in the latitudes of Paris and Rouen would be the first being in the west of Europe.'

Changes in races of domestic Animals, on becoming wild.—According to the conclusions drawn by a French author, M. Roulin, from examination of the changes suffered by animals on their return from a domestic to a savage state, of which abundant sources of observations are afforded in South America, the numerous varieties in the colour of the tribe in horses, asses, and pigs, acquire, in a state of wildness, an uniformity almost constant. This fixed colour is, in the horse, a bright bay inclining to chestnut; in the ass, a dark grey; in the pig, black. Hence it is concluded that the shades of colour, which depart from these natural hues, are clearly the effects of domesticity. Again, the gait and carriage of these animals acquire a character analogous to their independence. The ears of the pig are more pricked—its head becomes broader; the agility of the horse fully developes itself; the courage of the ass reappears, especially in males; while the irritability of the goat increases with the ease and quickness of its movements. M. Roulin, however, has observed that, in a savage state, traces of former domesticity of the breed are still perceptible. As examples, he mentions that wild horses proceeding from individuals which had been accustomed to *amble*, transmit that pace to their posterity; dogs, descending from a race employed in hunting the boar, have preserved in their wild state the means of attack and defence requisite in that sport. In Europe, the secretion of the milk in cows is rendered permanent by the act of milking; in cows which have become naturalised in America, that function ceases, and the udder dries up when the calf has done sucking.

The eyes of the Mole.—M. Julia de Fontenelle, in noticing the publication of a work, 'De la Vision chez la Taupe,' by M. Geoffroy St. Hilaire, read as a memoir at a sitting of the Académie Royale des Sciences, gives the

following summary of the opinions on this subject:—'Does the mole see? Aristotle, and other Greek philosophers, thought it blind. Galen, on the contrary, maintains that it sees,—affirming that it possesses all the known requisites for vision. In our days the question has been again discussed. Naturalists have actually found the eye;—it is very small—of the bulk, at the most, of a grain of millet; in colour, ebony; hard to the touch—yielding, although with difficulty, to pressure between the fingers. Besides the eye-lid, which covers it, it is protected by long hairs which, crossing one another in all directions, form a thick and closely-woven band. Such an eye should surely be destined to see with! But the anatomists do not find the optic nerve, which in other animals serves to transmit the visual sensation to the brain. Hence reaction in favour of the old opinion of the Greeks; in spite of its eye the mole does not see.—Yet experiments, made at the suggestion of M. Geoffroy St. Hilaire, incontrovertibly prove that the mole does see, since it turns to avoid obstacles placed purposely in its way. As a substitute for the optic nerve, M. Serres has suggested the existence of an upper branch of the fifth pair analogous to the ophthalmic branch of Willis. M. Geoffroy St. Hilaire, however, opposes this doctrine of a function performed by a nerve not especially destined for that purpose. The mole, he says, sees by the aid of a particular nerve; but this nerve being prevented by the great extension of the olfactory apparatus from following the course which it takes in other animals to the four-paired tubercles (the optic lobes of M. Serres) takes another direction, and inosculates, by the shortest practicable route, with the nerve of the fifth pair. Examples of similar anomaly have been observed in monstrous productions. M. Julia de Fontenelle concludes that the mole, as other animals, has two ocular nerves—principal and accessory; or optic and ophthalmic: both these two nerves are inclosed in a common sheath, in the same membrane. Besides the nerve which occupies the back of the eye, and which, from its position, may be considered the optic nerve, there is another, which occupies, in its very origin, a point of the circumference of the eyeball: this appears to proceed from a mucous and glandular tissue; perhaps from an actual lachrymal gland.

Compound Eyes of Insects.—Mr. Carpenter, in the March number of the 'Technological Repository,' states the result of microscopic observations made by him, to ascertain the truth of the existence of numerous eyes in some insects. Among the subjects experimented on by Mr. Carpenter, and which amounted to upwards of 200, the most familiar were, the boat-fly, dragon-fly, ant, gnat, bee, wasp, ichneumon, bombardier, inquisitor, cock-chafer, peachfly, earwig, grasshopper, locust, cricket, and cock-roach. Mr. Carpenter represents himself as fully convinced that the whole of these insects did really possess numerous and distinct eyes, varying in number, according to the species of insect; in some upwards of forty, in others a thousand, and upwards of thirty thousand in some species! The eyes of the libellula, Mr. Carpenter says, are, on account of their size, peculiarly well adapted for examination under the microscope. They are a couple of protuberances immoveably fixed in the head, and divided into a number of hexagonal cells, each of which contains a complete eye. The external parts of these eyes are so perfectly smooth, and so well polished, that, when viewed as opaque objects, they will, like so many mirrors, reflect the images of all surrounding objects: each of these protuberances, in its natural state, is a body cut into a number of faces, like an artificial multiplying glass, but with this superiority in the workmanship, that as in that glass every face is plane, here every one is convex; they are also much more numerous, and are contained in a much smaller space. Each of the eyes is an hexagon, varying in its size according to its situation in the head; and each of them is a distinct convex lens, and has a similar effect in forming the image of an object placed before it. Other creatures are obliged to turn their eyes

towards the object, but insects have eyes directed thereto, on whatever side it may appear.

The Editor of the 'Repository,' confirms the statements and conclusions of Mr. Carpenter, after inspecting the preparations of that observer, and from experiments made by himself, on the compound eyes of the French cray-fish, the lobster, and the common domestic or house fly.

Crocodile Riding.—An article in the 'Magazine of Natural History' confirms the account given by Mr. Waterton, in his 'Wanderings in South America,' and which some people have been disposed to doubt, of his catching a crocodile and jumping on its back, in order to conquer it. The 'Magazine' gives a sketch, after a plate in a rare book of field-sports, representing a man riding on a crocodile, and compelling it to go to land by means of a pole thrust between its jaws, and held at each end by the rider. This plate, in the original, is supposed to be an illustration of a passage in Pliny, in which this manner of taking the crocodile is described. Dr. Pococke, in his 'Observations on Egypt,' mentions a method of taking the crocodile still more like that adopted by Waterton. He says, 'they make some animal cry at a distance from the river, and when the crocodile comes out, they thrust a spear into his body, to which a rope is tied: they then let him go into the water to spend himself, and afterwards drawing him out, run a pole into his mouth, and, *jumping on his back*, tie his jaws together.'

Curiosities in the Eagle and Crocodile kind.—The *Bulletin Universel, Section des Sciences Naturelles, No. X.* gives the principal details of a communication made by M. Dussumier, merchant and shipowner of Bourdeaux, respecting a collection of objects of natural history lately brought by him from the coast of Malabar. Among them are an eagle, with the feathers of the back capable of reflecting metals, the food of which, as of the fishing-eagles, is fish; and the mainate, which was thought to be an inhabitant of Java only. Among the reptiles is a crocodile, in which M. Dussumier observes, that the two first teeth of the lower jaw enter holes corresponding with them, go through the cheek, and when the mouth is shut, appear above.

Danger from Rattle-snakes.—According to Mr. Flint, the author of a work on the geography and history of the Western States, U. S., the danger of the rattle-snake is more imaginary than real: at any rate, it has been the subject of much exaggeration. He says he has seen great numbers of persons who have been bitten by rattle-snakes, or copper-heads, or morassins, but had never known a fatal case.

Arrival and Emigration of Swallows, &c.—In an article contributed to the *Magazine of Natural History*, accompanied by a table shewing the earliest and latest appearances of the British hirundines, from the year 1800 to the present time, Mr. Bree observes, that the general flight of the swallow, marten, and sand-marten, does not usually appear till about the end of April or beginning of May, and retires about the beginning of October. Of the swifts, the general flight may be stated as arriving about the middle of May, and departing early in August. According to the table formed, the order in which these birds make their appearance should be thus arranged:—sand-marten, house-swallow, house-marten, swift. The earliest appearance recorded in the table (of individuals or parties of the species, not of the main body) is that of the sand-marten, March 31, in 1818, when about a score of them were seen sporting over the marshes between Gulval and Marizion, near Penzance. The earliest appearance noted of the swallow is the 3rd of April, in 1803; the latest period at which he has been seen is Nov. 20, in 1806: the earliest date of the appearance of the marten is also April 3, likewise in 1803; the latest day on which any of the same species have been visible in autumn, Nov. 14, 1813. The earliest appearance recorded of the

swift is the 29th April, in 1820; the latest period of his visibility, Sept. 15, in 1817, when two or three were seen sporting about near the sea-side, in the vicinity of Penzance.

The Shipworm.—Of the marine tribe of Moluscules, the *Teredo navalis*, the shipworm, is the only one which has excited notice by its destructive powers. This shell-enclosed worm, which Linnæus has styled the 'calamitas navium,' is said to have been introduced into our seas from the East within little more than a century. They are now common in all the seas of Europe; and being gifted with the power of perforating wood, they have done, and continue to do, extensive mischief to ships, piers, and all submarine wooden buildings. The soundest and hardest oak cannot resist them; but, in the course of four or five years, they will so drill it, as to render its removal necessary, as has happened in the dockyard of Plymouth. In the years 1731 and 1732, the United Provinces were under a dreadful alarm, for it was discovered that these worms had made such depredations on the piles which support the banks of Zealand, as to threaten them with total destruction, and to claim from man what he had wrested from the ocean. Fortunately they, a few years after, totally abandoned that island, from causes unknown, but suspected to be from their not being able to live in that latitude when the winter was rather severer than usual. The method now adopted to preserve the timbers necessarily used about the docks at Plymouth is, to cover that part which is continually under water with short broad-headed nails, which, in salt water, soon cover every part with a strong coating of rust, impenetrable to these animals.—*Mag. Nat. Hist.*

American Cane-Brake.—The Arundo Gigantea or *Miegia Macrosperma* is a reed, almost equalling in size the bamboo, much used in America for angling rods. It grows on the lower districts of the Mississippi, Arkansas, and Red River, from fifteen to thirty feet in height. The leaves are of a beautiful green, long, narrow, and dagger-shaped; not unlike those of Egyptian millet. It grows in equidistant joints, perfectly straight, almost a compact mass, and, in winter especially, is a most rich-looking vegetation. The smallest sparrow would find it difficult to fly among it, and with its ten thousand stems, rising almost contiguous to each other, and the impervious roof of verdure which it forms as its top, it has the aspect of being a solid layer of vegetation. A man could not make three miles a day through a thick cane-brake. It is the chosen resort of bears and panthers, which break it down, and make their way into it, as a retreat from man. When the cane has been cut, and is so dried as that it will burn, it is an amusement of high holiday to the negroes, to set fire to a cane-brake thus prepared—the rarefied air in the hollow compartments of the cane bursts them with a report not much inferior to a discharge of musketry; and the burning of a cane-brake makes the noise of a conflicting army, in which thousands of muskets are continually discharging. This beautiful vegetable is generally asserted to have a life of five years, at the end of which period, if it has grown undisturbed, it produces an abundant crop of seed, with heads very like those of broom-corn. The seeds are farinaceous, and said to be not much inferior to wheat, for which the Indians, and occasionally the first settlers, have substituted it. No prospect so impressively shows the exuberant prodigality of nature, as a thick cane-brake. Nothing affords such a rich and perennial range for cattle, sheep, and horses. The butter that is made from the cane pastures of this region, is of the finest kind. The seed easily vegetates in any rich soil. It rises from the ground like the richest asparagus, with a large succulent stem, and it grows six feet high, before the body hardens from this succulency and tenderness. No other vegetable could furnish a fodder so rich or abundant. —*Flint's Geography, &c. of the Western States.*

New Silesian Flora.—A new Flora of Silesia, a desideratum in botany, since the progress of the science has put the works of Matuschka and Kroker out of date, has been published by Messrs. Wimmer and Grabowski under the title of Flora Silesiæ. The authors, says the Bulletin Universel, appear to have invested their work with all the qualities required in a good Flora.

Effect of Poisons, &c. on Plants.—M. Zellet, in a work entitled 'Recherches sur l'influence de différentes substances organiques et inorganiques sur la vie des plantes,' gives the results of experiments made by him on the effect produced by poisons and other substances, on plants, from which he concludes that not only poisons, but other substances, such as gentian, volatile oils, valerian, camphor, rhubarb, ipecacuhanna, emetic tartar, &c. exercise a deleterious influence on plants. Venomous plants, or such as produce volatile oils, wither and die, if made to absorb the poisonous substances of their own production. The narcotic substances, bitter and volatile oils, spirit, spread their influence through the principal vessels of the plants, whence it extends gradually to the circumference of the leaves; nitrate of baryta, on the contrary, emetic tartar and several other salts, affect, first, the edges of the leaves, and thence descend to the other parts of the plant. The action of laurel water, of opium, of the vomic nut, deprives sensitive plants of the power of contracting their leaves; while camphor makes them contract them immediately, not again to open them. Poisons do not produce the same effect on monocotyledonous and dicotyledonous plants; many of the latter suffer much more than the former; the cone-bearing plants are but little sensible to poisons. Such plants as are not destroyed by the action of poison, lose the leaves and branches which have suffered the most by the operation, and afterwards shew renewed vigour. Rain and dew appear to have a salutary effect on them. All salts appear very pernicious, if used in large quantities; on the contary, they are great aids to vegetation when employed sparingly.—*Bull. Univ.*

§ 3.—Medical Science.

Experiments on the nature of Putrid and Typhus Fever.—A German work on the analogy of nervous and putrid fevers, details some curious experiments performed by a Dr. de Pommer to produce putrid fever in dogs by artificial means. He began by introducing into the stomach animal and vegetable substances in a state of putridity; but this process produced no effect, although continued for more than a month. The same, however, was not the case on injection of similar substances into the veins. The animal, in that case, fell sick and sunk under the experiment; and on opening the body, changes were perceived similar to those observed in the bodies of human subjects after typhus or malignant fevers. Among others, the following experiments were made. A drachm and a half of putrid blood was injected into the external jugular vein of a large dog, four years old. The vein was then bound up. No change was perceived in the animal during the operation, but immediately afterwards he refused to eat cooked meat, and to drink fresh water. He soon lay down from weakness: he got up when called, but, after a few steps, lay down again. Six hours after the operation, he vomited some bread and meat already digested, which he had eaten in the morning. His movements were slow, the look melancholy, the head hung down, the heart beat 111 pulsations in a minute. The following day, the dog ate and drank without sickness, and the third day a small tumour appeared at the wound in the neck, which seemed to contain a waterish liquid, and which afterwards disappeared. All evacuations ceased until the fifth day: the appetite and spirits then returned, and ten days after the injection the animal had recovered completely. The wound

had become cicatrised at the end of three weeks. A similar experiment was then repeated on the same dog, but he shewed no symptoms of affection until the second and third days: he did not vomit, but grew languid and thin. He recovered again on the seventh day.

Ten days after the latter cure, an injection was made into the right crural vein of the same dog. This injection consisted of half an ounce of putrid blood which had been kept twenty-six days. No change was perceivable during the operation, the dog ate and drank as usual; but counting from the third day, his appetite began to diminish; he still moved about, but he had lost his strength and his spirit; he grew thin; evacuations became rare; the pulsations of the heart feeble, respiration remained as yet unchanged. The sixth day after the injection the dog ceased to eat, he remained lying on the ground, and no longer got up when called; the pupils of the eyes were dilated—he died the same day in a state of complete exhaustion. On examining the body, the symptoms were found to correspond with those observable in the human frame on death by typhus or putrid fever. They are detailed in the Bulletin. The inferences drawn from the results of these experiments are, that the symptoms in typhus and putrid fevers are caused by a poisoning of the blood, which speedily produces a fatal effect on the nervous system, not merely because the blood is decomposed and become unfit for the nourishment of the nervous system, but because the outward agent which has decomposed the blood also acts as an irritating and exhausting poison on that system. The blood may be vitiated in its composition, and yet a typhus fever may not be the consequence: such is the case in the scurvy and the chlorosis. The alteration of the blood bears, no doubt, a great share in the production of the symptoms which characterize nervous and putrid fevers; but in them the poison itself must extend to the nervous system.

It is considered to follow from this, that typhus fevers are general disorders, and not simple nervous inflammations, or acute ulcerations of the stomach and intestines, or a morbid state of the channels of respiration. These local affections are merely the coarser and more frequent remains of the morbid action, and do not constitute the essence and immediate cause of that action.

Influence of Temperature on the Mortality of newly-born Infants.—MM. Villermé and Milne Edwards have addressed to the Academy of Sciences of Paris the result of their inquiries into the influence of temperature on the mortality of newly-born infants. Mr. Edwards, sen., had asserted that in animals of warm blood the heat-producing faculty is at its lowest point at the period of birth; and that, in general, in the first stage of life it is so feeble, that the temperature of the animal cannot be kept up when it is exposed to powerful causes of cold. M. Villermé and Milne Edwards had subjected this proposition to the test of statistical inquiries. They compared the mortality of infants in the north with that in the south of France, and found that it was greatest in the provinces in which the climate is the coldest. Taking the whole of France, and making the comparison between the seasons, they had discovered that it was always in the coldest season of the year that the deaths of children under one year old were most frequent, while from one year old to an advanced age the contrary was the case. The attention of the legislature, and of the ministers of religion, is called to this circumstance, and suggestions are made of the danger incurred from the custom of taking children at too early a period after their birth to the church for baptism, or to the Mayor's office to be registered. In France, the latter is required to be done within three days after birth. In cases of death the public officer is required to attend at the house; and why, it is asked, should not the same practice be observed in the case of birth?

Prison Food in Denmark—State of Health of the Prisons.—Dr. Otto prefaces the account of the maladies which have come under his notice in the prison at Copenhagen, called the House of Correction, with the following detail of the diet of the prisoners:—Sunday, brown peas and fresh meat, or soup and peas, or peas and salted horse-flesh; Monday, water-gruel; Tuesday, soup à la Romford, consisting of horse-flesh, dried bread, peas, salt, &c.; Wednesday, peas and salted horse-flesh; Thursday, gruel; Friday, soup à la Romford; Saturday, cabbage and salt horse-flesh. Every prisoner has, besides, 1½lb. of bread, 1½ pot of beer; and every Monday, three Danish ounces of butter. On this food they are compelled to work from five o'clock in the morning until eight at night. The ailings most frequent among them are nervous disorders, the consequence of weakness, and of the want of air and exercise, and hence chronical and acute affections: inflammatory and gastric cases are rare; in autumn and winter, rheumatism and colds prevail. Scrofulous cases are frequent. The author of the work before us had the cure of nineteen of this description. Under no other circumstances had he ever seen scrofulous tumours so large as those of the prisoners of Copenhagen, the effect, he concludes, of the bad nourishment, and of the want of air and exercise. Out of 821 prisoners under the care of Dr. Otto, twenty-six had died: of these, eleven were men, ten women, and two children. The deaths were, therefore, 3 per cent., or one in thirty-three, a proportion less than that observable in many other establishments of a like kind.

Military Hospitals of Copenhagen.—Out of 2216 patients in the military hospitals of Copenhagen, from the year 1816 to 1823, 1909 were cured, forty-eight died; thirty-one had been affected with the small-pox, of whom four had died. The expense of the 2216 patients amounted to 405 rix-dollars for medicine, and 814 rix-dollars for extraordinary expenses.

Vaccination in Portugal.—Vaccination was introduced into Portugal in the year 1799. An institution for its further propagation was established in 1812, as a branch of the Academy of Sciences of Lisbon; and the government and private individuals have shewn a laudable zeal in encouraging the adoption of the practice. In the report made to the Academy in the year 1819, the name of a lady is mentioned, D. Maria Isabel Wanzeller, of Oporto, who, in the course of her life, had herself vaccinated 13,408 persons. The use of vaccination had gone on gradually increasing from its first introduction to the year 1817, since which time, however, it has greatly declined. The numbers vaccinated in 1817, amounted to 19,999, in 1820 to only 5630. This falling off is considered to have an intimate connexion with political events.—*Bull. Univ.*

Treatment of Persons suffocated by noxious vapours, and in a state of excessive intoxication.—The 'Companion to the British Almanac for 1829' gives the following rules for proceeding in these cases, from a paper drawn up by Mr. Aaron, a surgeon of Birmingham. In the former case, if the body is yet warm, it should be freely exposed to a draught of fresh air; and cold water should be dashed over the head and chest. In other respects, it should be treated exactly as a drowned person. If the body is cold, warmth must be applied at first. In the second case,—1. These persons should have all tight parts of their dress loosened, the head should be covered with a cloth wet with cold water, and vomiting should be excited as quickly as possible, either by an emetic, or if the person cannot swallow, by tickling the throat with a feather, or the finger.—2. Clysters of salt and water should be given, and the person kept in the upright posture; and the head, on no account, be allowed to hang down. If recovery does not take place soon, mustard poultices should be applied to the feet; and if the extremities become cold, warmth and friction should be perseveringly used.

New Surgical Instrument.—The 'Medical Journal' speaks of a new instrument made of silver, invented by Dr. Granville, for the treatment of a certain class of dangerous tumours (particularly when affecting female patients,) by means of which their radical cure has been divested of all the horrors attendant on surgical operations. That physician has succeeded in removing such tumours without the use of the knife, ligature, or caustic, and in the short period of three days, with less pain than by the ordinary methods, and without the least chance of hæmorrhage. Another advantage of his contrivance is, that upon the falling off of the tumour, the surface left by it is found to be already advanced towards a healing state.

§ 4.—Agriculture and Rural Economy.

Mode of raising the Surface of the Soil in Tuscany.—The 'Technological Repository,' from the notes of a traveller conversant with subjects of agriculture, gives the following account of the mode adopted for raising and fertilizing the surface of the soil in the Val di Chiana, in Tuscany. This valley is forty miles long, and from seven to twelve broad, laid out into cultivated fields, divided into regular inclosures and squares, with ditches round every ten or twelve acres, and maples and elms, supporting vines, on the banks of the ditches. It is watered by the river Chiana, anciently named Clonis, which runs into the Arno; another part of the waters of the same valley of the Chiana goes into the Tiber. The ground is lower than the waters in the rivers, yet the valley is said not to be unhealthy. The countrymen, however, never go out in the morning without eating bread, and drinking some wine. The fields that are too low are raised and fertilized by the following process, called *colmata*:—The field is surrounded by an embankment to confine the water. The dike of the rivulet is broken down, so as to admit the muddy water of the high floods. The Chiana itself is too powerful a body of water to be used for this purpose; it is only the streams that flow into the Chiana that are used. This water is allowed to settle and deposit its mud on the field. The water is then let off into the river at the lower end of the field, by a discharging course, called *scolo*, and in French, *canal d'écoulement*. The water-course which conducts the water from a river, either to a field for irrigation, or to a mill, is called *gora*. In this manner a field will be raised five and a half, and sometimes seven and a half feet, in ten years. If the dike is broken down to the bottom, the field will be raised the same height in seven years; but then, in this case, gravel is also carried in along with the mud. In a field of twenty-five acres, which had been six years under the process of colmata, in which the dike was broken down to within three feet of the bottom, the process was seen to be so advanced, that only one year was requisite for its completion. The floods, in this instance, had been much charged with soil. The water which comes off cultivated land completes the process sooner than that which comes off hill and woodlands. Almost the whole of the Val di Chiana has been raised by the process of colmata. A proprietor, whose field is not adjacent to a stream, may conduct the stream through the intervening lands of another proprietor, on paying for the damage he occasions. The process of colmata is expensive, because the ground is unproductive during the seven or eight years that the process lasts; but this is soon repaid, with great profit, by the fertility of the newly deposited soil. After the completion of the process of colmata, the expense of which is always repaid with profit, the ground is cultivated for five years on the proprietor's own account; and the produce during these five years repays the expense of the process of colmata with interest. The first two years it is sown with Indian corn (*gran turco*), and sometimes hemp, the soil being too strong for wheat. The next three it is sown with wheat, without any manure. The produce of wheat, in this highly fertile state of the

soil, is twenty from one; whilst, in the usual state of the ground, the return of wheat is from twelve to fourteen from one. After this, the field is let out in the ordinary way to the farmers, the *contadini*. An operation similar to the colmata has been practised near Gainsborough.

Fishes, and mode of Preserving them.—Captain Jones, in his 'Travels in Norway,' says, at Lake Ilmen near Valdai they have a fish so like a herring, that it is called the fresh-water herring, and also another fish said to resemble a smelt. They have a mode of preparing them for a distant market, by putting them into ovens of a moderate temperature, and gradually but thoroughly drying them. In the 'Magazine of Natural History' it is asked, why may we not naturalize this fish, and adopt the same mode of curing other fresh-water fishes?

Extraction of Potash from Potatoe Tops.—The 'Register of Arts for March' details the process, adopted in France, for extracting potash from potatoe tops, the upper part of which contain so considerable a portion, as to render the extracting it a very profitable operation. The potatoe tops are to be cut off, at four or five inches from the ground, with a very sharp knife, the moment that the flower begins to fall, that being the period of their greatest vigour. Fresh sprouts spring, which not only answer all the purposes of conducting the roots to maturity, but tend to the increase of their size, as the sprouts require less nourishment than the old tops. From the results obtained in France, it is estimated that the quantity of land under annual cultivation with potatoes, in the United Kingdom, which exceeds 500,000 acres, might be made to yield nearly as many tons of potash; an amount nearly fifty times that of our annual importation from America!

State of Vegetation in April.—The Romans called this month April, from *aperire, to open*, because not only the spring-blossoms now expand to the returning sun, but the buds unfold to the fresh rains. The leaf-buds of trees are protected from the cold prevalent in the preceding months, both by being compactly folded and enveloped in a tough skin or membrane, and, in most cases, by a thick glutinous gum—difficult to freeze, and too adhesive to be washed off by rains. The only efficient solvent of the leaf-bud gum is the reascending sap, which dilutes it and renders it yielding, like the acid applied to its envelope by the puss-moth (*Cerura vinula*) when it escapes from its pupa. Every bud, it is worthy of remark, is supposed, by high botanical authority, to constitute an individual plant, and a tree is consequently a compound, or rather aggregate of these. The gardener's art of striking from cuttings, and still more the practice of budding, tends strongly to confirm this doctrine.—As the sap is now rising rapidly in the stems of trees and perennial plants, it is a good season to make experiments upon its motion, and to verify or disprove the recent views of M. Dutrochet, who asserts that the motion of the sap is partly, if not altogether, the consequence of electric currents.—*Comp. to the Alm.* 1829.

French Agricultural Society.—France is rapidly reaping the benefits which naturally follow from the establishment of a popular form of government in the formation of associations of individuals, having for their object the improvement and advantage of their country. Amongst institutions of this nature, those set on foot for the encouragement of agriculture, are by no means the least important or the least conspicuous. As an instance of the spirit and good taste with which these associations proceed, we may refer to the prizes proposed by the Agricultural Society of the Haute Garonne, formed in 1827. These are four in number, to be awarded, successively, one each year. The first will be bestowed on the landowner of the department who shall be deemed to have been most successful in the cultivation of wheat; barley,

or oats, and to have attained the greatest perfection in the means of cultivation. The prize will consist of a wheatsheaf, in silver, of the value of 350 francs. No person to be admitted a competitor whose experiments do not embrace at least 50 hectares (123¾ acres) of arable land. The succeeding year the society will present a silver thyrsis, of the value of 350 francs, to the landowner the most successful cultivator of the vine. For this prize the growers of other plants, whether kitchen or oleaginous, or in use for dye, or for weaving, are to be admitted candidates. The quantity of vineyards required for the experiments to be at least 20 hectares (49½ acres); of ground cultivated with other plants, 10 hectares (24¾ acres). The third year the society will award three shepherds' crooks to the landowners of the department who shall have distinguished themselves by improvements effected in wool. The first to be of silver-gilt, of the value of 200 francs; the second of silver, of 100 francs value; the third also in silver, worth 50 francs. The first and second prizes to be bestowed on the owners who shall produce the first and second best specimens of superfine wool; the third to him who shall offer the greatest improvement in wool, effected by successive crossings of ordinary ewes by rams of pure race. The candidates for these prizes are to produce their specimens from flocks of at least 100 head. The fourth prize will be given to the landowner of the department who shall be pronounced to have produced on his estate the best growth of wood from seeds, or have formed the finest plantations of timber-trees, or trees fit for the nourishment of silkworms. Besides these prizes, the society will recompense the bailiffs or head servants, and shepherds, who shall have most distinguished themselves in their respective offices.—*Bull. Univ.*

The German Agriculturist, Thaer.—Of all the persons of science whom Germany reckons among her benefactors, as contributing to the amelioration of her agriculture and rural economy, no one holds a higher rank than Albert Thaer, late Professor of Agriculture in the University of Berlin. This celebrated agriculturist was born at Celle, in Hanover, in 1752; he received his education and degrees at the University of Gottingen; and afterwards followed the practice of medicine, and was named Physician in Ordinary to the King of Great Britain. This profession, however, was not altogether suited to his taste or his manners; and, following the bent of a stronger inclination, he devoted his moments of leisure to the study of flowers, from which he was led to the more extensive one of agriculture. Having read all that was to be found in German on the subject of rural economy, and little satisfied with the doctrines of the writers among his countrymen, he had recourse to the English works on the same subject, and there found all that he desired. In 1794 he published an Essay on English Agriculture, and, by that work, excited in Germany a zeal for agriculture which far exceeded even his own expectations. He gradually renounced the practice of medicine, and devoted his whole attention to the management of a small estate which he possessed near Celle. He published the Annals of the Agriculture of Lower Saxony, and founded an institution for the instruction of young farmers. When the French took possession of Hanover, in 1803, he accepted an invitation to retire into the Prussian dominions, where he was elected a member of the Academy of Sciences of Berlin. He persevered in the work he had commenced at Celle, under the title of Annals of Agriculture, which continued to be published in his name until the year 1824, when the Academy of Agriculture of Berlin undertook the superintendence of it. That Thaer might have the opportunity of uniting practice with theory, and to encourage him to form an institution such as that which he had established at Celle, the King of Prussia presented him with a farm, forming part of the bailiwick of Wollup on the Oder; but as the soil of that district was fertile, and therefore not calculated for an establishment which was

at once to serve for experiments and for a model, he sold it, and with the purchase-money bought an estate at Mögelin. Here he devoted himself to the formation of his Agricultural Institution, which was opened in 1806, notwithstanding the difficult circumstances in which the country was then placed. In 1810, on the formation of the University of Berlin, he was named Professor of Agriculture in that institution, and reporter on subjects connected with agriculture to the Minister of the Interior. In the same year he published his Principles of Agriculture, a work of which the merit has been universally acknowledged, and which has been translated into most of the European languages. In 1815 he was named General Superintendent of the Flocks of the King, and in 1817 he was invested with the Order of the Red Eagle of the third class. In 1824 a jubilee was celebrated in his honour, to commemorate his taking the degree of Doctor, which he had then held for half a century. On this occasion, the Kings of Great Britain, Bavaria, Saxony, and Wurtemberg sent him orders of knighthood, and letters full of expressions of favour. His numerous friends and pupils were zealous in their congratulations, and the agriculturists of the kingdom sent him a deputation to express the sense of that body for the services he had rendered them. After this epoch he lived principally in the bosom of his family. The Prussian General State Gazette, from which this notice is abstracted, represents him as a man of exalted principles, and as the zealous advocate of the cause of liberty, were it freedom of commerce, of property, or of speech. He was of unimpeachable integrity. As a writer, conciseness and clearness distinguished his style; as a professor, his cheerful manners, and his lessons, at once instructive and amusing, made him beloved by all. He died on the 26th of October last, at Mögelin, in his 77th year.

§ 5.—Horticulture.

Pine-apples and Melons.—The Horticultural Society of Edinburgh have lately awarded a prize to Colonel Patterson's gardener at Cunnoquhie, for some fine fruit of this description produced by means of steam. The pit in which they were raised is contrived in a very ingenious manner to obviate the inconvenience of too rapid changes of temperature, which are sometimes felt when steam is applied in hot-houses. In this case, the chamber in which the vapour is collected for supplying the bottom heat, instead of being empty, and on that account quickly heated and quickly cooled, is filled with small round stones, which absorb the heat as it is produced, giving it out gradually and retaining it long; producing, by application of the steam for an hour and a half in the evening, an equable heat through the whole of the night and next day. The steam is distributed through this chamber by means of a cast-metal tube, perforated at certain distances; and it may also be admitted at pleasure amongst the plants above, by means of tubes with movable caps communicating with the same receptacle. The idea is, we believe, due to Mr. John Hay, of Edinburgh; but Colonel Patterson is the first amateur who has carried it into practice. The beauty of the fruit, and the neatness of the whole apparatus (so different from the usual appearance of melon frames), seem to point it out as one of the most eligible modes yet discovered for securing to this country the productions of the tropics.—*Fife Herald.*

Food of Lapwings.—The notion that lapwings are of use in gardens to destroy slugs, seems erroneous. Observations shew on the contrary, that the food they most relish is the common earth worm, and that they refuse both the black and the white slug.

Propagation of Potatoes by Plantation of the Germ.—Several German periodicals give an account of experiments made by a German curate

named Grebel, of Ringleben, near Erfurth, on the growth of potatoes by planting the germ. These experiments were made in 1826, notwithstanding the dryness of the season, and succeeded beyond expectation. Each plant produced from three to four pounds of potatoes; and some of the roots weighed nearly a pound each. According to Herr Grebel, the potatoe, called, by Putsche, the Hernkartoffel, is the best suited for propagating in this manner. A single germ has sometimes produced between six and seven pounds of potatoes.

§ 6.—Domestic Economy.

Method of clearing Feathers of their Animal Oil.—A lady (Mrs. Richardson) has received a premium of twenty guineas from the Society of Arts, for the following recipe for cleaning feathers :—'Take for every gallon of clean water one pound of quick lime, mix them well together, and, when the undissolved lime is precipitated in fine powder, pour off the clear lime-water for use. Put the feathers to be cleaned in another tub, and add to them a quantity of the clear lime-water, sufficient to cover the feathers about three inches, when well immersed and stirred about therein. The feathers when thoroughly moistened will sink down, and should remain in the lime-water three or four days; after which the foul liquor should be separated from them by laying them in a sieve. The feathers should be afterwards well washed in clean water, and dried upon nets, the meshes of which may be about the fineness of cabbage-nets. The feathers must be from time to time shaken on the nets, and as they dry will fall through the meshes, and are to be collected for use. The admission of air will be serviceable in the drying; the whole process will be completed in about three weeks: after being prepared as above mentioned, they will only require beating, to get rid of the dust, previous to use.'—*Reg. of Arts.*

Distinction between Potatoe Flour and Arrow-root Flour.—The Editor of the 'Register of Arts,' in a note to an article extracted from the 'New Monthly Magazine,' in praise of the use of potatoe flour, says, 'Potatoe flour may be known from arrow root-flour, by rubbing a little of it between the finger and thumb, when it will be observed that the potatoe flour is softer to the *touch*, and more shining to the *sight*, than that from the arrow root. The mucilage or jelly formed with boiling water, is in both cases alike, though some good women make serious charges against one or the other, namely, that they "*turn to water.*" This effect we can tell them does not take place unless sugar is put to the solution; for although water has a great affection for starch, it likes sugar better, and if left alone will gradually steal away to the latter.'—*Ed. Reg.*

Use of Rice.—Among the most useful and nutritious substitutes for wheat, and which has the advantage of correcting the unwholesome properties of bad flour, is rice. During the scarcity of wheat in July, 1795, one of the measures adopted at the Foundling Hospital, with a view of lessening the consumption of flour, was the substitution of rice puddings for those of flour; which, by the table of diet, were used for the children's dinner twice a-week. The flour puddings, for each day, had taken about 161 lb. weight of flour; the rice puddings, substituted in their place, required only 21 lb. of rice, to make the same quantity of pudding; the result of the experiment being that, in a baked pudding made with milk, one pound of rice will go very nearly as far as eight pounds of flour.

Rice contains a great deal of nutriment in a small compass, and does not pass so quickly off the stomach, as some other substitutes for wheat-flour do. It is a good ingredient in bread. Boil a quarter of a pound of rice till it is quite soft; then put it on the back part of a sieve to drain it; and

when it is cold mix it with three-quarters of a pound of flour, a tea-cupful of yeast, a tea-cupful of milk, and a small table-spoonful of salt. Let it stand for three hours; then knead it up; and roll it in about a handful of flour, so as to make the outside dry enough to put into the oven. About an hour and a quarter will bake it; and it will produce one pound fourteen ounces of very good white bread. It should not be eaten till it is two days old.'—*Comp. to B. Almanac.*

§ 7. Mechanical and Useful Arts.

Vessels impelled against Stream by force of the Stream itself.—A French engineer and mechanic, M. Tourasse, in a work recently published on the application of steam-boats to river navigation, gives a topographical statement of the principal rivers of Europe in which steam navigation may be employed with success. The work concludes with an explanation of the theory of water-impelled boats, *bateaux aqua-moteurs*, a name given to a system of navigation which derives from the current itself an impulse capable of driving the vessel against the stream. This impulse communicated to a capstan, winds up a rope fastened by its extremity to the shore, and thus drags the vessel forward, as if by towage.—*Revue Encyclopédique.*

National Repository.—This collection of ingenious works in mechanics and manufactures has been open for some weeks past. Although it does not appear to obtain *general* support from artisans and manufacturers, it contains many inventions and contrivances well worth the trouble of inspection. The process of working off lithographic prints seems the most attractive part of the exhibition to the generality of visitors. The new invented alarum watch is ingenious and perfect for its purpose. The alarum is in a separate instrument from the watch, and therefore the latter, when in the fob, is free from the incumbrance.

Pipe-heads of the Americans.—On the waters of the Little Lioux of the Missouri, and on a branch of the St. Peter's of the Upper Mississippi, is found a beautiful species of indurated clay, constituting a stone of the most singular appearance, commonly called pipe stone, from the circumstance that the savages in all these regions, quite to the Western Sea, make their pipes, and sometimes other ornaments, of it. It is said to be cut from the quarry almost with the ease of wood. It hardens in the air, and receives an exquisite polish of impalpable smoothness. It is nearly of the colour of blood, and is a beautiful article for monumental slabs, vases, and requirements of that sort. If it be as abundant and as easily procured as has been said, it will one day become an article of extensive use through the country. For, although marble abounds, this is a more beautiful material than any marble that we have seen. It has been generally asserted, that an imaginary line of truce extends round the places where this stone is found, within which the most hostile tribes pursue their business of cutting out stones for pipes in peace.—*Flint's Geography, &c. of the Western States.*

Watchman's Check-clock.—Mr. Knight, of Ann-street, Birmingham, has invented a simple contrivance as a check on a watchman or other person, of whose presence at a particular spot and on a given time proof is required. This machine is a clock, of which the dial-plate revolves while the index remains fixed. The stationary index is placed over the dial-circle, and the hours, as they successively come under it, denote present time. This index forms part of a bended lever, the fulcrum of which is in the interior or back of the clock, and the other extremity of it is attached to a bell wire, with suitable cranks to carry the line of communication to the required place, where a handle is connected to it, for the individual who is upon duty or gaurd to pull at stated times; this operation raises the power end of the

lever, and depresses the index, which makes a mark upon a temporary scale of hours fixed to the dial-plate, and indicates the precise time at which each mark was made. To enable the lever to make *a stroke*, there is a spring-joint where the lever is bent to a right angle, which allows the extremity of the index to move in a right line over the plate. The clock-face has two concentric circles of hours, the outer permanent and of a full size, the inner temporary, and of small dimensions. The latter is an engraved print, the divisions upon which correspond radially with those on the outer circle, and it is intended that a fresh card should be put on the dial-plate every day; it is contrived so as to enable them to be put on with accuracy and expedition; the card taken off forming a register of the duty performed.—*Reg. of Arts.*

To destroy Bugs in Canadian Pine Timber.—The Technological Repository recommends those who have occasion to employ the Canadian pine timber in flooring, to season it by steaming, as the most effectual measure that can possibly be taken to destroy, not only the bugs in the timber, but their eggs also, as the heat of steam or boiling-water is inevitably fatal to animal life. The Editor of the Repository learnt this secret from Mr. Bevan, the engineer, who, on being told of the great annoyance caused by the new species of bug imported with this timber, stated that he had built a house, the floors of which consisted of Canadian pine, but had never heard of any complaint of a similar nature being made in consequence thereof. However, upon recollection, he said, that, in order to season the planks, he had *steamed them.*

Hydraulic Cement.—M. Pasch, in the Annals of the Iron Board (Jern Kontoret's Annaler) of Sweden, gives the result of various experiments made by him during the progress of the canal at Grethu in Sweden, and previously on the best ingredients for hydraulic cements. He tried various species of lime found in Sweden; these he successively mixed with aluminous slate, or schistus, burnt clay, manganese, trapp, grunstein, pulverised granite, and ochre. He gives the preference to the aluminous schistus *(alunskiffer)*. He found it difficult, he says, to mix it with any species of lime, without improving the quality of the lime. In order to do this, he burnt it, and reduced it to powder. And thus he produced cements possessed of the necessary qualities of quickly drying, and a great tenacity. The author allows that, on account of carriage, this substance is rather costly; but he nevertheless thinks, that the great advantages which it produces, will well compensate for the expense of it. The opinion of the experimenter is unfavourable to the use of manganese, so greatly recommended, and he could not find that much good was obtained from the use of trapp, grunstein, the powder of burnt granite, and ochre; nevertheless, he thinks that the last-mentioned substance did a little contribute to the improvement of the cement.—*Tech. Rep.*

Fire-proof Dress.—The Austrian government of Milan have rewarded the Chevalier Giovanni Aldini with a gold medal, for an invention by which the qualities of metallic gauses, of being impermeable to flame, are applied with advantage in the forming a dress for firemen. This dress is made in the fashion of the armour of the knights of the chivalrous ages, and consists of a tissue of asbestos covered with a metallic gauze. It is represented to be at once incombustible, a non-conductor of heat, so light as to be no impediment to the most prompt agility, and no hinderance to efforts of strength. Specimen dresses of the kind, with directions for making them, will be forwarded on reasonable terms to foreign states, on application to the inventor at Milan, free of postage.—*Revue Encyclopédique.*

To make Gold or Silver Ink.—Take leaves of gold or silver, and reduce them to a fine powder by grinding them with white or refined sugar in a dry

state upon a stone with a muller, which very soon tears or reduces them to powder; after this put the paste so formed into a large glass vessel, and mix it with water. The gold or silver, by its weight, falls to the bottom of the vessel, and the sugar dissolves in the water; then decant it, and wash it with more water, until the sugar is entirely removed. Then dry the powder which remains at the bottom, and is exceedingly brilliant. When it is to be used for writing or painting with, grind it up with a solution of gum-arabic, and the ink is made. When dry, polish with a dog's tooth.—*Technological Repository.*

§ 8.—Fine Arts.

Exhibition of Groups of Sculpture.—The room in the King's Mews, Charing-cross, in which Mr. Lane's great painting of the Vision of Joseph was shown last year, is this season devoted to the exhibition of three groups of sculpture, executed by Mr. Crew for the Earl of Egremont, and, by the permission of that generous patron of artists, removed from Petworth, in order that they may be displayed in London. These groups represent, 1st. Venus and Vulcan; 2nd. the nymph Arethusa fleeing from the pursuit of Alpheus; and 3rd. Adonis seized by the wild boar. The largest of the three performances is the Venus and Vulcan. The goddess of love is represented returning to her angry spouse, in full confidence of charming away his ill humour, notwithstanding the ungracious reception she meets with on her first approach—she is attended by Cupid, who, on the other side of the stern deity, archly watches to catch his eye, and divert his ire, as he turns away from his faithless mate. The countenance of the goddess is expressive of any thing rather than contrition. The Arethusa is a single figure draped, with a dog by her side. The Adonis is also a single human figure, in an erect attitude, represented at the moment when he is assailed by the furious animal. A bar placed across the exhibition room keeps the spectator at a respectable distance from the sculpture, and prevents undue examination of the execution of these works. For the same reason they can only be viewed in one or two, perhaps the most favourable, points of view. At the private view a blind moreover, drawn beneath the window which is in the roof of the building, intercepted the full light of day, and placed further difficulties in the way of forming a judgment of the merit of the performances. This, however, has been since removed. Opinions differ as to the claims to admiration of these works; some critics laud them to the skies, but the sounder judgment seems to be, that they do not possess any extraordinary excellence.

Loss of a Picture by Raphael.—It is said to have been recently discovered that the celebrated painting by Raphael, known as Christ and a Disciple, but considered by some persons to be the painter himself and his fencing-master, has been furtively removed from the Gallery of the Louvre, and a copy substituted. The picture has been valued at £20,000.

Sculpture in France.—A notice in the French Journals invites the sculptors of the kingdom to a competition for the honour of executing the works destined to ornament the splendid new church of the Magdalene, which is at length near its completion. This church is in the form of a Roman Greek temple, in the style of the Vitruvian doric, and, in the time of the Emperor Napoleon, was destined to be the Temple of the Legion of Honour. The paper from which we derive our information does not specify whether the sculptures are intended to ornament the metopes, or, as is most probable, the pediments only. The subjects represented are to be events in the life of the saintly penitent.

Berlin Medals.—The coinage of medals in commemoration of important occurrences seems to be more in fashion in Berlin than in any other city of Europe. The mint of Von Loos is represented to be continually occupied in sending forth valuable medals, either on private commission, or in celebration of public events. A medal, successfully executed, in honour of the meeting of naturalists in Berlin in the month of September last, has been lately published, and since that was struck, the fall of Varna has furnished the subject of a similar production. This medal was brought out with great dispatch. The intelligence of the capture of the fortress reached Berlin on the 22nd of October, and the medal made its appearance on the 1st of November. On the obverse is a fine well-executed head of the Emperor Nicolas—from the same die, however, it should seem, as had been used for a former medal struck on occasion of the declaration of war against the Turks. The reverse contains, encircled by a wreath of laurel, the inscription—'Varna a Russorum fortissimo exercitu capta d. XI Octobr. MDCCCXXVIII.'—*Abend Zeitung.*

Death of the Composer Von Esch.—The celebrated musical composer, Louis Von Esch, died the beginning of last month, at the Palace Visconti, in Milan, after an illness of three days. This distinguished and elegant composer was of an ancient and noble German family, and came over to this country with many other persons of consideration at the commencement of the French revolution. Here he laudably availed himself of a peculiar native talent as a composer and teacher of music, in which profession he so eminently excelled. At the general peace of 1814 he left England to prosecute his claims for the recovery of the family property. His works, which are original, have long been considered as the standard of fine expression, united with good taste.

§ 9.—Antiquities.

Historical Correspondence between Egyptian Bas-reliefs and the Bible.—According to M. Champollion the younger, the identity between the Egyptian Scheschonk, the Sesonchis of Manetho, and the Sesac or Schishak of the Bible, is fully established by some bas-reliefs still ornamenting the walls of the palace of Karnac in Thebes of Egypt. The fourteenth chapter of the first book of Kings relates the arrival of Schishak at Jerusalem and his success; and one of the subjects represented by the bas-reliefs of the palace of Karnac, is Sesonchis dragging to the feet of the Theban Trinity, Ammon, Morith, and Khons, the chiefs of thirty conquered nations, among which is found written, in letters at full length, Joudahamalek, the kingdom of the Jews or of Judah.

Egyptian Bas-reliefs.—The chef-d'œuvre of the historical bas-reliefs of Thebes, says M. Lenormant in his seventh letter from Egypt, is the return of Mandone after his conquests, sculptured on the outward inclosure of the palace of Karnac. The king in his car, drawn by two magnificent horses, is followed by the principal officers of his army; he is preceded by the princes of the vanquished nations in chains. He advances towards Egypt, designated by a transverse representation of the Nile. On the other side of the river the priests and military chiefs are advancing in two lines, the first inclining before the king, holding up to him long bunches of lotus, the others throwing up their arms in token of rejoicing. The bas-relief is upwards of twenty feet high. The result of the observations hitherto made by M. Lenormant, leads him to the conclusion that art in Egypt reached its highest degree of splendour under the pacific princes, liberators of the territory, and that it became corrupted under the conquerors.

Ancient Egyptian Ciphering.—The professor Seyffarth, who has been lately engaged in examining the precious collection of papyri and other Egyptian Antiquities in the Royal Museum of Turin, among other important discoveries asserts that he has found a great number of papyri with both Greek and Egyptian writing, in which the figures in both texts corresponded with each other. He had also seen papyri with calculations in which the figures are all written in red, and partly ranged according to their order. The most important document of this kind found by the professor is a large account in which the total sums are marked between each column of figures. This has placed him in possession of the Egyptian system of ciphering, from one to a million, in the demotic as well as in the hieratic and hieroglyphic characters. Among other things are discovered, that the Egyptians employed the Decimal system, and that they used one sort of figures for common calculations or accounts, another for denoting the months, and a third for numbering days. Another circumstance, still more curious, is, that the Arabic figures are found among those of the Egyptians, which renders it probable that the Arabians did not invent, but merely borrowed their ciphers. The Egyptians wrote as we do, 1, 2, 3, &c. Even their fractions resemble ours; their fractional figures being written above and below a small horizontal line.—*Weekly Review.*

Raising of the Soil in Egypt.—Such has been the increased height of the surface of the valley of the Nile, that a depth of upwards of eight feet of vegetable soil covers the summits of statues still in their original position.—*Lenormant.*

Armour of Pyrrhus.—A recent number of the 'Athenæum,' in noticing the lectures on sculpture at the Royal Academy, alludes to some interesting bronzes discovered, in the year 1820, on the shores of the Sirus in Italy, and now in the possession of the Chevalier Brönsted. These bronzes are considered by the possessor to be the parts of the armour of Pyrrhus, lost in the first battle in which he encountered the Romans. Pyrrhus is recorded by Plutarch to have lost his armour on that occasion, and the pieces found are of a splendour both in material and workmanship, which could not be supposed to have belonged to any inferior personage. They are of bronze gilt, and represent Ajax and Teucer combating with Amazons. These subjects are considered as corroborating the opinion that the armour belonged to Pyrrhus, since those heroes were of the family of the Æacides, to which he belonged. It is suggested that other and more important members of the armour may have represented the victory over Penthesilea by Achilles, another of the Æacides, and from whom Pyrrhus claimed a direct descent.

Celtic Antiquities in France.—A monument not hitherto known is described by M. A. Maugin, a member of the Committee of Antiquities of the department of the Vosges. At a league north-west of the town of Darney, in a secluded spot shaded by forests, there rises a mountain, the crest of which is crowned with a vast rampart, which neither storms nor the encroachments of ages of vegetation have been able to destroy. This inclosure, known in the country by the name of *Châtelet Gaulois*, is in form of a tolerably regular ellipse, of a cord of 240 feet, with a width of 270 feet. Within are elevated *tumuli*, some oblong, forming collective sepultures of private soldiers, the others, in the shape of cones, erected to chiefs; these tombs, however, being on a dry soil, and subjected during a succession of ages to the action of the sun, wind, and rain, have been almost entirely destroyed. Two masses of stone are standing on the highest part of the platform, and appear to have served for supports to an upper block now thrown down, and to have formed part of one of those monuments in rough stone commonly called

Dolmen, and which are so frequent in countries formerly inhabited by Celtic races.—*Bull. Univ.*

Site of the Landing in France of Henry II. of England.—At a recent meeting of the Society of Antiquaries of Rouen, M. Gerville announced that he had discovered the real site of the landing of Henry II., king of France, in 1177. This place, mentioned in the 13th volume of the French historians by the name of Kapplevic, still bears that of Cap Levic, and is at Fermanville, the point of the coast nearest to Portsmouth, whence Henry embarked for Normandy. M. de Gerville discovered a great number of Roman tiles on the same spot, a circumstance by which he was led to conclude that there formerly existed there a Roman *vicus*, whence may have proceeded the name of Ceppelevic (*caput vici*).

§ 10.—General Literature and Education.

Hebrew Metre.—A German author, J. J. Saalschuetz, in a work on the subject of Hebrew poetry, discusses the point, never yet satisfactorily settled, although many attempts have been made to determine it, of the structure of Hebrew poetry. After examining the four principal opinions relative to the question, whether the Hebrews followed a metrical method in their verse, a question often agitated since the age of the fathers of the church, he passes to a critical examination of the works which may serve to confirm or impeach the existence of a system of metre in the Hebrew poetry, and he concludes that the Jews made use of three sorts of feet in the construction of their verses, the trochee, the spondee, and the dactyle.

Spartan Letters in the Maccabees.—On occasion of the last annual examinations at the gymnasium of Darmstadt, a German author, H. Palmer, put forth a dissertation in Latin, in defence of the authenticity of the letters contained in the first book of the Maccabees, which passed between Areus or Darius, king of Sparta, and Onias and Jonathan, the chiefs of the Jewish nation. M. Palmer maintains that the objections raised against the authenticity of these letters are not of sufficient weight to justify the rejection of the letters as interpolations. In answer to the objection that the first letter of the Spartans is written in the Alexandrian, and not in the Doric dialect, M. Palmer replies that the books of Maccabees were written originally in Hebrew, and that the translation into Greek having been made in the Alexandrian dialect, the letter from Sparta would necessarily appear in that idiom, as well as the rest of the book. The author of the dissertation conjectures that this letter was written by Areus, king of Lacedæmon, to Onias, at the period when Demetrius Poliorcetes, conqueror of Athens, threatened the Peloponnesus, and when it was the interest of the inhabitants of that peninsula to raise against him as many enemies as possible in Asia.

Universal Language.—M. Bürger, of Heidelberg, well known by his mathematical works, has announced a system of universal language, by which a correspondence may be kept up, on easy and certain principles, by individuals of all nations, although totally unacquainted with each other's native language. The acquisition of the system will scarcely require two days.—*Foreign Review.*

Russian Literary Works in preparation.—Messrs. Bludoff and Stroeff have undertaken the editing of the unfinished historical works of Karamsin, of which the twelfth volume will appear in a short time, with an analytical review of the entire work. The commission charged with the getting up of the "Akten des Reiches," "Annals of the Empire," are about to commence editing the fourth volume of this important work. From the Historical and Archæological Society, among other interesting productions shortly expected to

appear; is a Russian translation, enriched with notes of the Travels of Herbersten, written in Latin. M. S. Glinka, the author of a history of Russia, much esteemed in that country, is employed in a history of the life and reign of the late Emperor Alexander. The first volume has already appeared in Moscow, the second will be speedily published. A tragedy, under the title Boris Godunoff, is announced from the pen of a poet celebrated in his own country, Alexander Puschkin. The entire works of the promising poet Venerikinoff, prematurely deceased, are about to appear in Moscow as one collection. Besides his original productions, Venerikinoff is known as the translator of several of the works of Gothe. Two translations of Tasso's 'Jerusalem Delivered' have appeared at the same time. The author of the one is M. Raitsch, of the other M. Merzliakoff. A. M. Vrontzenko has translated 'Hamlet' into his native tongue. Translations are also in a state of progress of the historical works of Thucydides, of the History of Poland by Leleval, and of the History of Sclavonian Literature by Schaffank. Say's 'Economie Politique,' and Degerando's 'Visiteur du Pauvre,' are also translating in Moscow.—*Blätter für Literarische Unterhaltung.*

Relations between France and Turkey.—There has ever existed a great uncertainty as to the precise epoch, and the nature of the relations which were established in the reign of Francis the First between Turkey and France. No writers on the subject have ever yet been able to cite authentic original documents. M. Hammer, in a memoir entitled 'Mémoire sur les premières relations diplomatiques entre la France et la Porte,' maintains that the first overtures were made after the battle of Pavia, in 1525, by the queen mother, who governed France during the captivity of her son. M. de Hammer shows in the sequel, that this connection was never interrupted, and that in 1540 there had been at least six embassies sent by France to the sultan. On this subject he cites the testimony of both Ottoman and Christian historians. He has more especially had recourse to the memoirs written at the time by a Venetian nobleman, which are now at Vienna, and which form fifty-eight folio volumes.—*Bull. Univ.*

Cherokee Newspaper.—'The Literary Gazette' of the 28th of February gives an account of an interesting document, a newspaper of one of the native nations of North America. 'The Cherokee Phœnix,' published at New Echota, printed in English and Cherokee, No. 34, (October 22, 1828) contains a report of the general council of the Cherokee nation, which appears to be the Cherokee congress. This report commences with the message of the principal chiefs, which appears to be equivalent to the senate of the United States. The general council or congress consists of twenty-four members, three for each of the eight districts composing the Cherokee nation. These districts are Chickamanga, Chattooga, Coosewatee, High Tower, Hickory, Log, Tahquohee, Aquohee, and A-mo-hee. It met, according to a newly organised constitution, on the 15th of October, when *Going Snake* was appointed speaker. Among other names of members, English and Scotch patronymics, are the following: Sleeping Rabbit, Tsu Nung-gee, Bark, Laughing Mush, White Path, Da-ye-ske, Ne-gah-we, Walking Stick, Turtle, Chuleo, Slim Fellow, Matoy, Cricket, Nah-hoo-lah, Si-too-wa-gee, De-geh-le-loo-gee, Robert Musk Rat, and Deer-in-the-water!

Besides the report abovementioned, the paper contains a letter from a Captain Rodgers, an address of Washington to the Cherokees in June 1724, extracts (foreign news) from English newspapers of August, and extracts from United States Journals relative to Turkey, Greece, literary matters, quotations from books, reviews, &c.: altogether, a very judiciously selected miscellany. Two advertisements close the third page, and the fourth opens with Poets' Corner, the rest being filled with

further selections. The paper is about nineteen inches long, and twelve wide, in five columns, and correctly printed in a good type. About a column and a half is in the Cherokee character.

History of Russia in French.—The Count de Segur, author of the celebrated work on the Russian campaign, has just completed and published a History of Russia and of Peter the Great. This work has been in hand fifteen years, it is principally occupied with the reign of Peter the Great; the history of the empire previous to that period is traced in a rapid and summary prologue.

French History.—Among the works recently published at Paris, is the History of the life of Philip Augustus, by Capefigue, after the manner of the work of M. de Barante on the dukes of Burgundy. The author has taken the chronicles for his text, at the same time elucidating their recitals by examinations of original manuscripts and documents, popular poetry, legends, and fables. The work consists chiefly of simple narration without any intermixture of reflection. The moral and political deductions, the result of the researches of the author, are reserved for separate chapters. The work is described as likely to prove popular.

Lancastre. New French Tragedy.—A new tragedy by M. d'Epagny, entitled Lancastre, has been recently brought out at the theatre of the Odeon, at Paris. The deposition of Richard II. forms the subject of the plot, but, as will be seen from the following account, abstracted from *Le Globe*, the author has not incommoded himself by adherence to historical facts. Lancastre (Henry IV.) has succeeded in exciting a general disaffection towards Richard, and under the pretext of espousing the cause of the queen, from whom Richard had been estranged by his arts, invades the kingdom with an armed force. Richard, alarmed at the clamours of the populace, had shut himself up in the Tower, but his queen gains admission to him, and an explanation and reconciliation takes place, by which all pretence for revolt is removed. Lancastre, however, in an interview with Richard, represents to the pusillanimous monarch that, although he may have power sufficient to put down the rebellion, yet that he (Lancastre) was in a situation to oppose him; and was determined not to submit without a struggle; that a civil war and consequent slaughter of the subjects of Richard must ensue. The king is moved at this representation, and at the instigation of his ambitious cousin promises to abdicate. The queen, however, has more spirit than her consort, she appeals to the nobles of the kingdom, who rise in her favour. Lancastre is frightened in his turn; shows himself as spiritless as Richard; despairs of his cause, and writes a letter to the king, declaring his resolution to poignard himself. This determination, however, he does not execute, but, in the mean time, a treacherous valet about the person of Richard, but in the interest of Lancaster, stabs the king. In this event Lancastre finds a new cause for real or affected despair; he desired the throne, but not the life of his antagonist. The nobles, however, are assembled to receive the abdication of Richard. Henry is puzzled how to announce to them the murder. The grand marshal is about to speak, when the king, supposed to be dead, makes his appearance, pale and bloody, and totters to the foot of the throne. Lancastre, with reason, deems himself ruined, but no; Richard, in his tender love for his people, collects his strength, and avails himself of the last moments of life left to him, not to accuse Henry, but to name him his successor. A mad scene is introduced in the last act, in which the queen makes her appearance in a state of delirium covered with a long veil stained with the blood of her husband. Besides these obvious absurdities, *Le Globe* objects, that the author in representing Richard II. in the Tower of London, has shown that he had in view Louis XVI. in the Tower of the Temple, and this by allusions not

possible to be mistaken, and by putting in the mouth of the former the very expressions made use of by the latter.

History of the Gauls.—A recent number of *Le Globe* contains a review of the History of the Gauls by M. Amedée Thierry. The object of this work is to trace the history of the Gaulish nation from its origin through its successive changes. M. Thierry assigns the Gauls a triple origin according to three different languages. The first in use at the foot of the French Alps, and on the other side of that chain of mountains in the Peninsula of Iberia: the basque now spoken is a remnant of it. The second, that of the Gaelic Gauls. It was the language of the east-south-east and centre of the Gauls: it was also the language of the northern part of Britain, and of all Ireland: in modern times it is the national idiom of the north of Scotland and Ireland. The third was the language of the western and northern people of Gaul, and of the inhabitants of the Island of Great Britain to the Frith of Solway and the mouth of the Tweed;—the sounds of this dialect being those still preserved in Basse Bretagne, and the mountains of Wales, the kymraig or kimrique language. According to M. Thierry the Gauls, called improperly the Celts, appear the first possessors of the country of the Gauls. These, sixteen centuries before the Christian æra, invading and conquering the Iberian republic, drove back the Iberian race, the basque, into Gaul; nine or ten centuries later the Kimric race, the Cimmerians of Greek antiquity, under their leader Hesus, arrive from the Euxine and the Bosphorus, press the Gallic nation to the east and south of the territory, and introduce the Kimric dialect. Lastly, after three more centuries, the Kimric Belgians, pouring from the forests bordering on the Rhine, still further extend the dominion of that language. Having assigned this origin to the Gauls, the author afterwards traces them through times and circumstances more known, from the Cimmerian Bosphorus to the shores of the Adriatic, from the coasts of Northern Gaul to the foot of Mount Taurus, and down to the times when they come in contact with the Romans in the north of Italy, and thence through their struggles with the conquerors of the world until the subjugation of Britain by Julius Cæsar. The work is extolled for its simplicity, for the absence of dissertation, while a sufficient display of philosophy is made in the general arrangement and plan.

Translation of English Works.—Among the most recent translations from the English into the French tongue is the second series of Sir Walter Scott's 'Tales of a Grandfather;' the 'Elements of Moral Philosophy' of Dugald Stewart, from the fourth edition, by M. H. Jouffroy, with an introduction by the translator, being the substance of a course of lectures delivered at the Sorbonne; Beattie's 'Minstrel,' and the 'Tom Jones' of Fielding.

Africans educated in France.—It has been announced to the Geographical Society of Paris, by M. Jomard, that M. Drovetti, the French Consul-General in Egypt, has begun to realise the philanthropic project devised by him, of sending young Africans to Europe for education. Six young Africans from the most distant parts of Ethiopia have been embarked for France to be educated and made familiar with the sciences and civilization of Europe. The education of the young Egyptians now studying in Paris was alluded to by M. Jomard on the same occasion, and represented by him to be proceeding most satisfactorily.

Education in Silesia.—The statistical report of the schools (gymnasien) in Silesia for the scholastic half-year 1826-27, enumerates to the number of twenty establishments of that description. This amount includes the gymnasium of Breslau and the riding-school in Liegnitz. Of these twenty schools thirteen were of the protestant religion. The number of teachers amounted to two hundred and twenty-eight, that of pupils to five thousand six hundred and ninety-four.—*Abend Zeitung.*

Education in Greece.—A commission has been appointed by the President of Greece for inquiring into the state of the schools in the islands. According to the Sanitory laws, however, which have been necessitated by the apprehension of the plague in several places, this commission has been obliged to confine its investigations to Ægina, Hydra, Kimilo, Naxos, Paros, Poros, Santorin, Scopelo, Seryphos, Siphanto, Sikino, Skialtro, Skiro, Spezzia, Thermia, and Zea. These islands possess ninety-three schools, in which 2333 youth receive instruction; of these twenty-three schools with 969 pupils are on the Lancasterian plan. Thirteen schools with 296 pupils, in which the ancient system of instruction is followed, existed under the Turkish government: fifty-seven with 1386, of which fourteen with 557 on the new, and forty-three with 829 on the old system were founded between the 1st March, 1822, and 1st January, 1828; twenty-two with 651, of which nine with 412 after the new plan, and thirteen with 239 on the old system, were instituted between the arrival of the President and the 1st May, 1828. The principal objects of instruction are reading, writing, ancient and modern Greek, ciphering, geography, and the history of ancient Greece; in some, French, Italian, and English, in others, Latin and Geometry; in many theology, metaphysics, and chemistry are taught. Of the thirteen schools of the first period, principally attended by children between five and fifteen years of age, five teach arithmetic; geography is taught in two, ancient Greek language and history in four, French and Italian in two. Of the fifty-seven schools of the second period, (the number of adults who partake the instruction of the schools of this period, as also of the next, increase daily) arithmetic is taught in forty, geometry in twenty, ancient Greek language and history in thirty-seven, French and Italian in seven. In all the twenty-two of the third period arithmetic is taught, in fifteen of them geography, in seventeen ancient Greek language and history, in four French and Italian, in two English. It is remarkable that the schools established since the revolution have done no injury to those existing in the time of the Turks; the latter thrive and increase on a par with the former.

French Journal in the Morea.—A new paper in the French language, the *Courier d'Orient*, has lately been established at Patras. It embraces subjects of politics, commerce, and literature, and appears once a week on days not fixed, under the direction of M. Raybaud, a French Philhellene. The price in Greece is 40 francs a year, or 20 francs for six months; for the Mediterranean and Ionian Islands 50 francs and 25 francs.

§ 11.—Naval and Military Economy.

Russian Recruiting System.—The government ascertains, by surveys made every fifteen years, the number of male serfs of every age and profession, and according to the returns made for every district regulates the impost and the number of recruits required from each. The government takes no concern in the moral condition of the individuals subject to the service, provided they possess the physical qualities requisite to support the fatigues of it. This mode suits well the nobles, who avail themselves of it to get rid of their drunken, idle, or thievish slaves: at the same time it is a handle for the cupidity and an instrument of the vengeance of some masters. A noble in need of money chooses one of his slaves who is endowed with the qualities requisite for the service, and presents him to the council of recruitment, which immediately hands him over a receipt. This receipt is equivalent to a bill of exchange, and is readily discounted by any one indisposed to furnish his man. The slave who has been the victim of this speculation is forthwith torn from his home and almost ever from a numerous family.—*Niellon Gilbert, Coup d'œil, &c.*

Exercises of the Russian Soldiery.—The Russian guard is divided into young and old. All are of a tall stature and extremely robust. The present emperor has relieved their uniform of all incumbrances. The troops are strictly disciplined and perfectly trained. To acquire the due precision in their movements, if the author above cited, M. Niellon Gilbert in his 'Coup d'œil of the Russian Empire,' is to be credited, the soldiers are manœuvred naked, in order that their action may be better observed, and one of their colonels accustoms the men under him to carry a glass of water on the head while exercising, to habituate them to a perfect equilibrium. The mutiny of the regiment Semenosky, in 1826, is attributed to the tactician tortures to which it was subjected.

Bavarian Army.—The Bavarian army consists of sixteen regiments of Infantry, four battalions of Chasseurs, two regiments of Cuirassiers, six regiments of Light-horse, two regiments of Artillery, and five companies of Artificers, forming an effective force of—

	In Peace	In War
Infantry	40,608 men	41,688 men
Cavalry	9,216	9,360
Artillery	3,120	3,456
Artificers	650	720
	53,594	55,224

In peace there are constantly 16,440 men on furlough, who are neither clothed nor paid; it follows, therefore, that the government only maintains 37,154 men.—*Bull. Univ.*

Maritime Schools in Sweden.—By order of the king of Sweden, there are established in all the Swedish ports, schools for teaching navigation and practical seamanship. Their chief object is to furnish the merchant service with a sufficient supply of qualified captains and mates, who, in the event of a war, may also form excellent officers for the national military marine. The pupils are divided into two classes, the instruction in one of which is chiefly devoted to the navigation of the Baltic, an accurate knowledge of which sea is highly important both to the commerce and the naval prosperity of Sweden; the education of the other class is of a more general nature. As an incitement to improvement, it has been thought advisable to unite civil privilege with professional rank. It is therefore ordered, that from the first Jan. 1829, no captain of a ship shall enjoy the rights of a Swedish citizen, who has not previously received from the superintendent of the said schools, or from a naval officer duly authorized, a certificate of his having been examined and found in every respect duly qualified.—*Unit. Serv. Jour.*

Fortress of Ecluse.—The works of the Fortress of Ecluse, on the road from Lyons to Geneva, are carried on with a rapidity which gives reason to expect that they will be soon completed. Independently of the principal fort which commands the defile between the foot of the Jura Mountains and the Rhone, there have been constructed on the steep declivity of the mountain a succession of smaller forts, connected with each other by covered ways. These are adapted for the reception of heavy artillery, and would be able to dismount whatever batteries might be established on the opposite shore of the river, where the territory belongs to Savoy. To whatever extent these works may be carried, it is calculated that a garrison of 300 men will be sufficient to arrest for weeks the progress of any army that should attempt to force the passage.—*Bull. Univ.*

Kings Ships lost in the Year 1828.—The March number of the *United Service Journal* gives a list of vessels belonging to the royal navy lost

since his Majesty's accession. We extract those lost in the course of the last year. *Cambrian*, 46 guns, 1086 tons, Capt. G. W. Hamilton, wrecked off Candia, 31st January. *Union*, schooner, 4 guns, 90 tons, Lieut. C. C. Dent, wrecked off Napau, N. A. 21st March. *Acorn*, ship-sloop, 18 guns, 455 tons, Com. E. Gordon, built by Sir Robert Sepping, at Chatham, launched 16th November, 1826, foundered on passage from Halifax to Bermuda, in April. *Contest*, brig, 12 guns, 250 tons, Lieut. C. Plaggenborg, foundered in company with Acorn. *Parthian*, brig, 10 guns, 235 tons, Com. G. F. Hotham, wrecked off Scio, 16th May. *Redpole*, packet-brig, 10 guns, 235 tons, Bullock, Master, built in 1811, and rebuilt 1824, left Rio de Janeiro in August with the mails, and has not been heard of since. *Jasper*, 10 guns, 235 tons, Com. L. C. Rooke, wrecked on the island of Santa Maura, in the Mediterranean, 13th October. *Kangaroo*, ship-sloop, surveying vessel, Mr. Anthony de Mayne, (who had commanded her for above ten years) was wrecked on the Hogstiefs, West Indies, 13th December.

§ 2. Geography, Statistics, &c.

New Northern Expedition.—An expedition, on private speculation, but countenanced it is said by the Admiralty, is about to be made to the polar sea under the command of Captain Ross. The expedition is projected by that officer, and will be undertaken at the private expense of himself and his friends. The whole plan is his own, and the outfit, the mode of proceeding, the length of time employed, the remaining or returning, will be decided on his own knowledge and responsibility. Captain Ross will go out in the Victory, a steam-vessel of 200 tons burden; and accompanied by the John, a ship of 320 tons, laden with fuel, provisions, and stores. The Victory is *fortified* on principles that must render her capable of withstanding all injuries from the ice. The paddles are upon a construction quite new; and the build is such that a severe pressure of ice would raise the vessel instead of crushing her: should she fail as a steamer, the paddles can readily be taken off, and she is immediately rigged and navigable as a sailing vessel. Captain Ross, it is said, will, in the first instance, proceed to Lancaster's Sound, and examine Prince Regent's Inlet, which, it will be remembered, afforded the fairest prospect of an approach to the northern land. Having ultimately, either by this channel or any other, reached the American coast, it will be the object of the expedition to complete its examination, and especially to inspect that portion which was left unexplored between the efforts of Captains Franklin and Beechey. The Victory and John are to be manned with a crew of 60,—20 in one, and 40 in the other vessel; and when we mention that Captain Ross (the nephew of the commander, and the companion of Parry, &c.) is to accompany his uncle, we give an assurance that every thing which science,—astronomy, botany, natural history,—may look for, will be amply fulfilled.

Provisions for three years are to be taken out; and the expedition will be ready to start by the middle of next month.

It should be observed that there is now no pecuniary reward to tempt to the exploit. All that Captain Ross can look for, is the assistance of instruments from the Admiralty, the Royal Society, and other public bodies; and these are liberally offered.—*Literary Gazette.*

Pension to M. Caillé.—At a late meeting of the Geographical Society of Paris, it was announced that a sum of 3000 francs for each of the years 1829 and 1830 had been ordered to be paid to M. Caillé, the Timbuctoo traveller, from the treasury of the Minister of Foreign Affairs, to afford him the means of acquiring from the public lectures information necessary to qualify him to return with all possible profit to Africa.

French Traveller in the Levant.—M. Honoré Vidal, at a meeting of the Geographical Society of Paris on the 6th of March, gave an account of a great number of journeys made by him in Asia and Egypt, between the years 1807 and 1837. He had, it seems, four times crossed Arabia Deserta, in seasons and under circumstances the most unfavourable: he had traversed Mesopotamia and Chaldæa in every direction. He had made two journeys from Bagdad to Constantinople, and from Constantinople to Bagdad by sea and land. He had also gone over the greater part of Syria, Anatolia, Turkey in Asia, Persia, a part of Armenia, the shores of the Black Sea, and Egypt. The greater part of these journeys was made by M. Vidal at his own expense, and with a view to his own instruction, and to the acquisition more especially of knowledge interesting to the science of geography. His familiarity with the language and manners of the Turks, and, above all, his knowledge of the various Arabic dialects, gained him ready admission to all quarters, and afforded him the opportunity of making highly interesting observations. In his travels it was his constant endeavour to determine the distance and direction of places and the courses of rivers, and to acquire accurate geographical knowledge. He purposes arranging his notes and submitting them to the society.

Geography of Nubia—New Map.—A splendid map of Nubia—the result of the travels and labours of two of our countrymen, Mr. Parke and Mr. Scoles, architects,—has just appeared. It has been delineated after a survey made in 1824, and comprises the course of the Nile, between the first and second cataract, and the country on each shore of the river. On it are indicated the situations of all the celebrated monuments: and this part of the work is performed with such care and minuteness, that their character, nature, and even the description of materials used in their construction, are noted. The well-authenticated sites of other places, and even the non-existence of remains in supposed sites, are also marked. Information useful for the navigation of the river is given, as to the state of the stream at different seasons: and the cataracts themselves are described. On the same plate are a plan and perspective view, admirably drawn, of the island of Philoe, in itself so beautiful as a picture—so rich also in ancient monuments. The scale of the map is about ten miles to a degree. The work altogether shows great research, and bespeaks the authors to have been inquiring travellers: its getting up is most creditable to their industry, skill, and enterprising spirit as artists.

The River Dourga in New Guinea.—At a recent meeting of the Geographical Society of Paris, a letter was read from the Baron de Capellen, offering, in the name of M. de Kolff, an officer of the Royal Navy of the Netherlands,—the narration of a voyage made by that officer in the eastern part of the Indian Archipelago, and the environs of New Guinea. The work is accompanied by a map, on which the author has traced a river, the Dourga, the mouth of which, of great width, has been recently discovered in the eastern part of New Guinea.—*Le Globe.*

Teflis under the Russians.—The capital of the whole of Georgia and Imiretta is Teflis, formerly the residence of the Czar, situate on the river Kur, in a delightful plain surrounded by vineyards and fruit-gardens, and the gayest scenery. The town itself is badly built, yet it is large; although since it was sacked by the Persians in 1795 but sparingly populous. It is surrounded with walls, but in parts the streets still remain unpaved. It is the seat of a Greek bishop, has a citadel, a castle, about 4000 dwelling-houses, 15 Greek and 20 Armenian churches, a catholic convent with a chapel, and three Mahometan mosques, and about 30,000 inhabitants, who carry on all kinds of arts, especially weaving, as well as some foreign commerce. They

consist mostly of Armenians, Georgians, and Tartars, with a few Russians. Teflis has also a mint. In the neighbourhood are warm baths, and mines of rock-salt. Since it has been possessed by the Russians, a new school has been established for the young Georgian nobility and gentry, to which the emperor contributes yearly 10,000 rubles from the produce of the silk cultivation. The most promising youths are sent at the expense of the state to Moscow, or St. Petersburg, to complete their studies.

From its situation on the Kur, by which a communication is kept up with the Caspian Sea, and from its vicinity to the Black Sea, this city may, in time, under the favourable government of Russia, become one of the largest and richest towns of the empire, and serve for the emporium of the products of central Asia, destined for Europe. Already many Mahomedan families resort to it from Persia and Armenia as new settlers, to partake the advantages of the more enlightened government of the Christian Russians. A great recent increase in the population has been the consequence. New dwellings have been built, and are still in progress. The inhabitants duly appreciate the advantage of living under a government by which person and property are respected, and which is capable of protecting them from foreign molestation.—*Morgenblatt.*

Religious Toleration in Russia.—Besides the professors of the orthodox religion of the country, Russia contains Roman Catholics, Unitarians, Lutherans, Calvinists, Armenians, Mennonists, Mahometans, Jews, Adorers of the Great Lama and Idolaters. The number of Roman Catholics is estimated at seven millions, and that of the Christians of other persuasions at two millions and a half. The Mahometans of Kasan, Astrakhan, Siberia, Orenbourg, the Crimea, the Caucasus and Lithuania, and others, have mosques in the places where they have fixed their sojourn; their number amounts to more than three millions. Synagogues exist in the districts and towns where, for a considerable time, Jews have dwelt: the number of that nation in Russia is estimated at about 500,000. As to paganism, to idolatrous wanderers in the deserts of Siberia and in the wild plains of Kirguis Kaissaks, must be added the worshippers of the Great Lama, and those of the Fetiches and the Schamans. Heretics and schismatics of different sects, whose religion seems confined to vain prejudices and superstitious practices, are also abundant.

In the midst, however, of these different sects, religious toleration is constantly the same in Russia. For six centuries, during which the empire has existed, not a single example of persecution by the government on account of religion is to be found in history.—*Bull. Univ.*

Statistics of Russia.—According to the statements contained in a work published in Russia, entitled 'Delits commis en Russie pendant l'année 1827,' during the whole year 1827 there were only 189 thefts committed in all Russia!—the number of persons apprehended as criminals, deserters, or vagabonds, amounted to 2739, of whom 27 had made their escape: the number of deaths by accidents was 14,829; the assassinations 1226; the suicides 1176. There happened 3295 accidental fires, 192 the work of incendiaries, and 166 occasioned by gunpowder explosions. The 'Télégraphe de Moscou', after making this enumeration, indulges in comparative reflections on the morality of the Russian people and that of the French and English. But it is very doubtful, as will be suspected from the statements above given, whether the sources whence the conclusions are respectively drawn are all equally authentic. The official statement now, and for two years past, annually made in France, entitled 'Compte rendu de l'Administration de la Justice Criminelle,' is, as yet, says the 'Bulletin Universel,' unique in its kind.

Population of Russia in 1825.—There were born in Russia in 1825, of the Greek or national religion 890,641 male, and 814,976 female infants, making a total of 1,705,615. There died in the same year, males 544,996, females 526,210, total 1,071, 206, whence an increase of 634,409. This is somewhat less than the augmentation in 1823, which was 663,343, still more considerably below the increase of 1824, which amounted to 713,285 individuals. The ordinary duration of life appears to have been from 60 to 65 years; but in the year mentioned, 27,556 individuals had exceeded the age of 70, 13,869 had attained 80 years, 2742, 90 years, 1144, 95 years, 568, 100 years, 154, 105 years, 56, 110 years, 30, 115 years, 23, 120 years, 4, 125 years, and 4 likewise 130 years.—*Bull. Univ.*

Population of Sweden and Norway.—The population of the kingdom of Sweden increased between the years 1820 and 1825 by 69,212 inhabitants. In 1825 it was 2,771,252 souls, of whom 20,499 nobles, 13,977 clergy, 66,601 of the middle class, and the rest belonging to the class of peasants. The persons in office in the civil service amounted to 9,271. The army and navy consisted of 2199 officers, and 40,159 soldiers and sailors.

Norway, according to the census of 1826, contains 1,050,132 individuals, of whom 105,021 inhabit the cities, 10,607 the frontier-towns, and 934,414 the country. The two most populous towns are Bergen, with 20,844 inhabitants, and Christiania with 20,581. In 1815 the whole poulation was reckoned at 886,470. Bergen then contained only 18,111, and Christiania 10,638.

Prosperity of the Port of Dunkirk.—At the sitting of the Academy of Sciences of Paris, of the 23rd of February, much commendation was bestowed by the reporter, M. Heron de Villefosse, on a work of M. Charles Durosoir, entitled 'Voyage pittoresque de S. M. Charles X. dans le Département du Nord,' which was pronounced to contain important statistical information. From the details given relative to the prosperity of the town of Dunkirk, it appears that the number of vessels frequenting that port had more than doubled within the last ten years. The prosperity of the port had exceeded of late years the point it had reached at the end of the last century.

Operation of the Law of Arrest.—According to papers laid before Parliament, pursuant to the motion of Mr. Hume on the subject of the law of arrest, the number of debtors committed to the five principal prisons in the metropolis, during the year 1827, was as follows: to the King's Bench, the total number of commitments was 1591: of these 1397 were on Mesne Process, and 194 after Judgment entered. To the Fleet, number of commitments 683. M. P. 623. J. R. 60. Whitecross Street, total number 1893. M. P. 1483. J. R. 410. Marshalsea, total 630. M. P. 392. J. R. 238. Horsemonger Lane, total 1172. M. P. 275. J. R. 897. The result is, that there were 5969 persons committed to those five prisons during the year 1827, of which number there were 4170 committed on Mesne Process, and only 1799 on Judgment entered. In the three prisons first mentioned 3503 were committed before proof, and 664 after proof; and 1150 for debts under 50*l.* The total number in custody in the respective prisons on the 1st Jan. 1828, was as follows. In the King's Bench 674. Fleet 254. Whitecross Street 378. Marshalsea 102. Horsemonger Lane 108. Total 1515.

Unclaimed Dividends.—The amount of dividends due and not demanded, remaining in the Bank of England on the 5th Jan. 1829, was 1,206,878*l.* 3*s.* 7*d.*, and the amount of lottery prizes not claimed at the same date, was 2510*l.* making together 1,209,388*l.* 3*s.* 7*d.* The advances made to Government out of the above sum, pursuant to the 31st, 48th, and 56th of George III., amount to 1,112,468*l.* 0*s.* 4*d.* The balance is therefore 96,920*l.* 3*s.* 3*d.*—*Parliamentary Paper.*

MONTHLY METEOROLOGICAL JOURNAL,

From February 21, 1829, *to March* 20, 1829.

51° 32′ 30″ N. 8′ 30″ W.

Feb. and Mar.	Inna-tiqus.	Ther-mometer. Mean Alt.	Baro-meter. 9 hour.	Winds A.M.	Winds P.M.	Atmospheric Variations. 9 h. A.M.	0 hour.	8 h. P.M.	During Night.	Prevailing Modification of Cloud.
21		46	28.84	S.	S.	Rain	Rain	Rain	Rain	Cirrostr. Cum.
22		41.5	.74	N.W.	N.W.	—	Moist	Fair, Cl.	Fair	—
23		32.5	29.17	E.	E.	Fair, Cl.	Fair, Cl	—	—	—
24		35	.17	S.E.	S.E.	—	—	—	—	—
25	h. 8 20PM ☾	37	.68	—	—	—	—	Sleet	—	—
26		38.5	.85	E.	E.	Foggy	Rain	Rain	Rain	—
27		39	.94	N.E.	N.	Moist	—	Fair, Cl.	Frost	—
28		30	30.22	E.	E.	Fair, Cl	Clear	Clear	—	— Cumulus
1		31	.15	N.E.	N.E.H.	Clear	Fair, Cl.	Fair, Cl.	—	—
2		33	.09	N.E.	—	Fair, Cl.	—	—	—	—
3		35.5	.15	E.	N.E.	—	—	—	Moist	—
4	h. 0 36PM. ●	37.5	.12	N.	N.	Rain	—	—	Fair	— Nimbus
5		37	.10	E.	N.E.	Fair, Cl	—	—	—	Cirrostr. Cum.
6		40	.01	N.E.	N.	—	—	—	—	— Cumulus.
7		41.75	29.87	—	N.E.	—	—	—	—	Cumulostratus.
8		44	.86	—	N.	—	—	Rain	—	Cirros. Nimbus.
9		44	.75	W.	N.W.	Moist	—	Fair, Cl.	—	Cumulostratus.
10		37.5	.67	N.E.	N.E.	Fair, Cl.	—	—	Frost	— Cumulus.
11	h. 9 49AM. ☽	34.5	.67	—	E.	—	—	Clear	—	— Cumulus.
12		35.5	.53	E.	N.E.	—	—	Fair, Cl.	—	Cirros. Cumulos
13		37.5	.45	N.E.H	N.E.	—	—	—	—	—
14		35.5	.62	N.W.	N.W.	—	—	—	—	— Cumulus.
15		39	.68	N.E.	N.	Clear	Clear	Clear	—	Cumulus.
16		39	.57	E.	E.	—	—	—	—	—
17		36	.28	W.	W.	—	—	—	—	—
18		46	.41	S.	S.	Fog	Fair, Cl.	Moist	Moist	Cymoid Cirrost.
19	h. 1 51AM. ○	55	.39	—	S.W.	Fair, Cl.	—	Fair, Cl.	Fair	Cirrostratus.
20		57	.42	S.W.H.	—	Stor. W.	—	—	—	Cirrostr. Cum.

THE JOURNAL OF FACTS.

MAY, 1829.

§ 1.—Natural Philosophy.

Dr. Brewster's Opinion as to Motion in the Molecules of Bodies.—The last number of the Edinburgh Journal of Science contains an article by Dr. Brewster on the motion of the molecules of bodies, as observed by Mr. Brown. Dr. Brewster says, that in examining the motions of granules of pollen suspended in water, he had recognised movements which he was satisfied were entirely the result of the position of unstable equilibrium which they occupied in the fluid medium. Dr. Brewster adds, that if these motions resisted every method of explanation, it is the last supposition in philosophy that they are owing to animal life. He asks, moreover, what, indeed, are all the motions of the planets,—what are their progressions, their stations, their retrogradations, their revolutions, their mutations, but so many movements in the larger molecules of the universe? Why, then, need we wonder that the miscroscopic molecules of this lower world should exhibit their attractions, their rotations, their combinations, their dilatations, and their contractions? We are disposed, indeed, to go much farther, and to ask, Why should not the molecules of the hardest solids have their orbits, their centres of attraction, and the same varied movements which are observed in planetary and nebulous matter? The existence of such movements has already been recognised in mineral and other bodies. A piece of sugar melted by heat, and without any regular arrangement of its particles, will in process of time gradually change its character, and convert itself into regular crystals, possessing a mathematical regularity of structure, and displaying all the wonderful phenomena of double refraction. A mineral body will, in the course of time, part with some of its ingredients, or take in others, till it has become a new mineral, and has entirely lost its personal identity;—and (as has recently been discovered) a regular crystal may, by the mere introduction of heat, have the whole arrangement of its molecules converted into an opposite arrangement, developing new physical properties which it did not before possess. In these changes the molecules must have turned round their axes, and taken up new positions within the solid, while its external form has suffered no apparent change, and while its general properties of solidity and transparency have remained unaltered.

Difference on a Scientific Hypothesis between the Baron Cuvier and M. Geoffroy St. Hilaire.—A difference of opinion exists between M. Cuvier and M. Geoffroy St. Hilaire, on the question of the principle of unity in the organic composition throughout the animal kingdom. M. Cuvier, in a recent work on the natural history of fishes, has treated this notion maintained by M. Geoffroy St. Hilaire as poetical and imaginary. On the other side, M. Geoffroy St. Hilaire, in an introductory discourse to his lectures as professor at the Jardin du Roi, has defended his own doctrine, and discussed and refuted, says the 'Revue Encyclopédique,' the opinions of those who deny the principle of unity in organic composition.

Opinions of M. Geoffroy St. Hilaire on the Connexion between antediluvian and existing Animals.—At the sitting of the French Royal Academy of Sciences of the 23rd March, M. Geoffroy St. Hilaire read the first of a

series of memoirs on the connexion in organic construction and parentage which may exist between animals of the historical ages and now existing, and the antediluvian and lost races. M. Geoffroy asks, whether the animals of which the remains are to be found buried in the bosom of the earth, and which belong almost all to species, or to genera not now to be found in the living state, should be considered as the progenitors of such as now inhabit the globe, under the supposition that the latter have undergone a modification from the influence of time, and the changes which have occurred in the state of the globe. Or, should the contrary opinion be adopted: are we to believe, that after great deluges new beings have been produced by new creations? or, in short, as M. Geoffroy expresses it, that the six days' work has been repeated? The author of the memoirs avows himself favourable to the former view of the question, and the object of his work is to show the grounds of his opinion.—*Le Globe.*

Human Fossils.—The discovery by M. Tournal of an intermixture of human remains with those of animals considered antediluvian in the black marl of the caverns of Bize, continue to engage the attention of the French naturalists. The subject has been referred by the academy to the investigation of a commission composed of the Baron Cuvier and MM. Brongniart and Cordier. The discoverers do not infer that the human bones appertain to subjects existing earlier than the assigned period of the creation of man, but conclude that certain animals, the species of which are now extinct, had their existence prolonged beyond the period at which mankind first appeared on the globe.

Dr. Wollaston's Elementary Galvanic Battery.—Mr. Dakin, in a lecture on galvanism, delivered at the Mechanics' Institution, as reported in 'The Manual of Science and Literature,' explained a curious apparatus invented by Dr. Wollaston, which he called an *elementary galvanic battery*, and which consisted of a silver thimble with its top cut off. It was then partially flattened, and a small plate of zinc being introduced into it, the apparatus was immersed in a weak solution of sulphuric acid. With this minute battery, he was able to fuse a wire of platinum, one three-thousandth of an inch in diameter, a degree of tenuity to which no one had ever before succeeded in drawing it. Upon the same principle (that of introducing a plate of zinc between two plates of another metal) Mr. Children constructed his immense battery, the plates of which measured six feet by two feet eight inches; each plate of zinc being placed between two of copper, and each triad of plates being inclosed in a separate cell. With this powerful apparatus, a wire of platinum, one-tenth of an inch in diameter, and upwards of five feet long, was raised to a red heat, visible even in the broad glare of daylight.

Construction and Use of Conductors of Lightning.—On the 30th of March M. Gay Lussac, in the name of the physical branch of the Académie des Sciences, read a report on various questions put by the minister of war concerning the construction of lightning conductors, and their application to powder magazines. The questions were put by the minister in consequence of an injury sustained by a powder magazine at Bayonne, to which the conductor had appeared to contribute, instead of serving as a protection. The report states, that the accident at Bayonne was to be ascribed to the imperfect construction of the conductor, which, instead of being made to enter the ground at the foot of the wall of the magazine, either to a sufficient depth, or into a pool of water, was carried off horizontally to a distance of thirty-six feet by five wooden uprights, thirty-two inches high, and then made to take a perpendicular direction downwards, but for only six feet, into a hole six feet square, built up on every side with masonry, but having at the bottom of every side two arches to give a greater surface of contact between the earth

and the charcoal with which the hole was filled. The using the charcoal in its natural state, and not calcined, is noted as another source of imperfection. The points of contact, which were four rays of iron at three feet from the extremity of the conductor, each one foot and a half long, and having three points and four other rays lower down, and one and a half feet from the extremity, each seven and a half inches long, were also pronounced insufficient. The report concludes that a conductor well constructed would have preserved the powder magazine at Bayonne from all injury; but that such magazines, when properly constructed, and bomb proof, having nothing to fear from lightning, they are more likely to be affected by the electric fluid, especially when the risk of imperfect construction is taken into consideration, if provided with a conductor, than if left without one.

Expected Comet of 1832.—The following are the calculations of M. Damoiseau as to the orbits of the comet of 1772, 1806, and 1826, on its expected reappearance in 1832.

Passage of its perihelion, in November 1832, period 27.4808th day.

Paris mean time, counting from midnight.

Longitude of the perihelion	109°56′45″
Longitude of the ascending node	248 12 24
Inclination	13 13 13
Eccentricity.	0.7517481
Demi-grand axe	3.53683

Bull. Univ.

Length of Pendulum.—The following table gives the result of the observations made during the voyage of the French corvette *La Coquille*, of the length of the pendulum vibrating seconds in a vacuum, and at the level of the sea, in divers latitudes.

	Latitude.	Pendulum.
Toulon	43°07.20 N.	0.99950585
Port Jackson . . .	33 51.40 S.	0.99871430
Isle of France. . . .	20 09.23 S.	0.99789022
——— Ascension . .	7 55.48 S.	0.99729881

At Paris, latitude 48°50′14″, the length of pendulum 1.00000000.

Difference in Degrees of Temperature in the Old and New World.—Pursuant to a government order to that effect, the surgeons at the military posts of the United States' army, furnish annual returns of their observations of the state of the thermometer at their respective stations. From these returns, and the ascertained temperature of places on our side of the Atlantic, the following comparative table of respective latitudes and longitudes, and mean temperatures has been prepared, and is given in the last number of the Edinburgh Philosophical Journal, from a copy of the printed report brought from America by Captain Basil Hall.

Places.	North Latitude.	Longitude.	Mean Temperature.
Petersburg	59°56′	30°24′E.	38°80
Stockholm	59 20	18 00 E.	42 39
Edinburgh	55 57	3 00 W.	47 70
Berlin	52 32	13 31 E.	49 00
Leyden	52 10	4 32 E.	52 25
London	51 31	———	51 90
Rouen	49 26	1 00 W.	51 00
Paris	48 50	2 25 E.	52 00
Vienna	48 12	16 22 E.	51 53
Nantes	47 13	1 28 E.	55 56

Places.	North Latitude.	Longitude.	Mean Temperature.
Poitiers	46°39′	0°30′ E.	53°30
Fort Brady	46 39	84 43 W.	41 37
Padua	45 23	12 00 E.	52 20
Fort Snelling	44 53	93 08 W.	45 00
Bourdeaux	44 50	0 26 W.	57 60
Fort Sullivan	44 44	67 04 W.	42 44
Fort Howard	44 40	87 00 W.	44 50
Marseilles	43 19	5 27 E.	61 86
Fort Crawford	43 03	90 53 W.	45 52
Fort Wolcott	41 30	71 18 W.	51 02
Council Bluffs	41 25	95 43 W.	50 82
Pekin	39 54	116 29 W.	55 50
Washington	38 53	76 55 W.	56 56
Algiers	36 49	2 17 E.	72 00
Fort Johnston	34 00	78 05 W.	66 68
Cantonment Clinch	30 24	87 14 W.	68 77
Grand Cairo	30 00	31 23 E.	73 00
St. Augustine	29 50	81 27 W.	72 23

From this it appears, that in the higher latitudes the average difference for the same degree of mean temperature is 1°4° 30′, and in the lower ones 7° 30′, the mean of which is 11°. Thus the mean temperature at Stockholm, in latitude 59° 20′, is about the same as at Fort Sullivan, in latitude 44° 44′; while that at Rouen, in latitude 49° 26′, is about the same as at Fort Wolcott, in latitude 43° 20′; and at St. Augustine, in latitude 29° 50′ it is but 0.77 lower than at Grand Cairo, in latitude 30°.

Measurement of High Temperatures.—M. Pouillet has lately read to the French Academy of Sciences a memoir on the measurement of high temperatures in degrees of the common thermometer; in which he detailed a process for the examination of high temperatures, which, he considers, give results perfectly accurate. The means adopted by M. Pouillet bear some analogy to all those which are founded on the expansion of the air, and more especially with that used in the East Indies by M. Prinsep, director of the mint at Bennares, published in the first number of the 'Philosophical Transactions of 1828.' M. Pouillet's apparatus was finished, he avers, before he was acquainted with the labours of M. Prinsep. The following are some of the results given by M. Pouillet. The temperature of dull and red heat scarcely perceptible from 850° to 950°. The temperature of bright red 1004°.

Silver melting 1677°.

Melting of an alloy of 1 part gold to 3 of silver 1803°.

The temperature of the fusion of pure gold 2096°.

The average results found by M. Prinsep are as follows:—

Full red heat	1206° Fahr.
Orange heat	1650
Silver melting	1830
Silver with one-tenth gold	1929
Silver with one-tenth gold	2050

Mr. Wedgewood made the melting point of silver so high as 4717° and Mr. Daniell 2233°.

Diminution of the Dip of the Needle.—In the month of January a paper by Captain Sabine was read to the Royal Society, detailing the result of observations made by him in August last, in the horticultural gardens at Chiswick, on the dip of the magnetic needle in London, compared with the

determination of the dip in the Regent's Park in August 1821, published in the "Philosophical Transactions for 1822." The result obtained is the average of observations made with five different instruments. A decrease is found in the dip in London of 17'.5 in seven years, or an annual decrease of 2'.5.

The average annual decrease for the century preceding 1821 appears, from the most authentic observations, to have exceeded 3'. On examining the series of observations made on the dip in Paris since 1798, by MM. Humboldt, Gay Lussac, and Arago, the author had a corresponding indication of a recent diminution in the yearly decrease of the dip; it appearing, by those observations, that the average yearly decrease in the first half of the period between 1798 and 1828 exceeded 4'.75, and in the second half fell short of 3'.

Effect of Oxygen Gas on the Animal Economy.—At a meeting of the Royal Society on the 26th of March, a paper was read, giving an account of several experiments made by Mr. Broughton, surgeon in the guards, on inferior animals, with a view to ascertain the effect of pure oxygen gas on the animal economy. These experiments, to the number of eleven, were principally performed on rabbits from three weeks old, and upwards, which invariably died after exposure for some time to an atmosphere of unmixed oxygen. After death Mr. Broughton found that the heart continued to act for some minutes; and that, in one instance, even the circulation proceeded uninterruptedly: for, on pricking the aorta, the blood spurted out in the same manner as during life. In the course of the inhalation of oxygen, the whole blood of the animal becomes arterial, that is, of a bright scarlet—appears to be thinner and more transparent—and is more readily coagulable. The surface of the lungs and the pleuræ are strongly injected at the same time, and seem in that state of congestion which must lead to suffocation. If, after the death of the animal in oxygen gas, there be a sufficient movement perceptible in the diaphragm, Mr. Broughton says that inflation of the lungs with common atmospheric air will restore the animal to life.

Coloured Flame of Spirits of Wine.—The professor Vogel, in a memoir read to the Assembly of Naturalists at Munich, in 1827, gave the following rules for colouring the flame of spirits of wine, either yellow, red, or green. A yellow flame is produced by setting fire to the spirits over salt, of which the bases may be either ammoniac or soda, manganese, iron, mercury, platina, gold, nickel, cobalt, or bismuth. A red flame is obtained by making use of salts, the base of which is either lime, or strontian, or lithine, or magnesia. If the spirits be burnt over salts of copper, uranium, or alumine, a green flame is obtained. All the salts made use of should be soluble in alcohol. A green flame is also to be procured by dissolving in the alcohol boracic acid, or weak hydrochloric ether. It follows, from the experiments of M. Vogel, that the oxide of copper is reduced by burning alcohol, to protoxide and metallic copper, and that the green flame itself contains copper.

Comparative Strength of Iron and Steel.—The following statement of th comparative force of iron and steel is to be found in a work on the relative cohesion of iron and the different kinds of steel, by M. Mittis, as noticed in Kastner's Archiv, viz. a rod of good iron of Stiria, an inch thick, required a weight of 400 quintals to break it; a rod of equal thickness of Stirian steel, not immersed, took a weight of 749 quintals 53 lbs. to break it, while a rod of the same dimensions of meteoric steel was not broken, except by a weight of 1130 quintals.

Increase of Bulk in Cast-Iron by successive Heatings.—In the course of the experiments made by M. Prinsep on high temperatures, he discovered the very remarkable fact, that *cast-iron acquires a permanent increase of*

bulk by each successive heating. This point is determined by measuring the cubic extent of an iron retort, as ascertained by the weight of pure mercury which it contained at the temperature of 80°. The actual contents were as follows:—

Before the first experiment . .	9.13 cubic inches.
After the first fire . .	9.64 ———
After three fires . .	10.16 ———

But what is more remarkable still, *the augmentation of the bulk of the retort exceeds the dilatation due to the temperatures to which it was exposed.* For as iron expands 0.0105 by 180° of Fahrenheit, the increase of bulk upon 10 cubic inches should be $0.105 \times 3 = 0.315$ at 1800° of Fahrenheit, or even the melting heat of silver. Hence it is to be concluded that the dilatation of iron is not equable, a result formerly obtained by Messrs. Dulong and Petit. —*Edin. Jour. of Science.*

New Associate of the French Académie des Sciences.—Mr. Olbers of Bremen, the distinguished astronomer, who discovered the planets Ceres and Pallas in the year 1802, has been nominated Foreign Associate of the Academy of Sciences in Paris, in the room of Dr. Wollaston.

§ 2. Natural History.

The Chameleon—its manner of preying, and change of colour.—Mr. Robert Spittal, in a communication to the 'Edinburgh New Philosophical Journal,' details some interesting observations made by him of the habits of the Chameleon, and the probable cause of its change of colour. The animals in the possession of Mr. Spittal were five inches in length, exclusive of their tail. They lived entirely upon insects. On observing one—the method of attack pursued was to the following effect. They slowly moved towards their prey, as if afraid to disturb it; at the same time keeping their eyes firmly fixed upon the insect until within a few inches of it, then on a sudden darting forth the tongue, and as suddenly withdrawing it, they secured their prey, which very voracious mastication and deglutition soon disposed of.

The greatest distance to which the tongue protruded was about five inches, generally less, never more. This organ, protruded by strong muscular power, is chiefly returned to the mouth by an apparatus attached to its base, which acts by its resiliency, in a somewhat similar way to the elasticity of a silk purse, when drawn out, and suddenly let go. The better to enable the animal to seize its prey, the extremity of the tongue folds up to a slight extent, somewhat like the extremity of the proboscis of an elephant; and moreover the organ is coated with an adhesive matter.

The result of Mr. Spittal's experiments on the changes of colour in this animal, leads him to conclude, that the existing opinions which attribute the change of colour to the action of the lungs as the chief cause is correct. This state of the lungs, as remarked by Cuvier, is produced by the [illegible] and passions of the animal, renders the body more or less transparent, and forces the blood more or less to flow towards the skin, that fluid being coloured more or less brightly, according to the quantity of air taken into the lungs. With regard to the transparent property of the body of the Chameleon, Mr. Spittal says, that on one occasion, he and a companion were tolerably sure that they observed the shadow of the wires of the cage, during the bright sunshine, through the body of one of them, while in a compressed state.

Attachments of Animals.—A correspondent of the 'Magazine of Natural History' relates the following. 'There were two remarkably fine ostriches, male and female, kept in the Rotunda of the Jardin du Roi. The skylight over their heads having been broken, the glaziers proceeded to repair it.

and, in the course of their work, let fall a triangular piece of glass. Not long after this, the female ostrich was taken ill, and died after an hour or two of great agony. The body was opened, and the throat and stomach were found to have been dreadfully lacerated by the sharp corners of the glass which she had swallowed. From the moment his companion was taken from him, the male bird had no rest; he appeared to be incessantly searching for something, and daily wasted away. He was moved from the spot, in the hope that he would forget his grief; he was even allowed more liberty, but naught availed, and he literally pined himself to death." The same contributor, although on the authority of other persons, tells a tale which many of our readers will probably think is not to be too implicitly received, of a crane being cured of its grief for the loss of its mate by the placing of a looking-glass in the aviary, the reflection from which is said to have deluded the bird to the recovery of its health and spirits which were rapidly declining.

Birds forsaking their Nests.—Another correspondent of the same Magazine gives the following, as the result of his observations on the attachment of birds to their nests. 'The redbreast will sit on any egg substituted for its own, even a blackbird or thrush's, and will breed up the young ones; a hedge-sparrow will do the same, and most probably any soft-billed bird. Later in the season, after a bird has made one or two nests, it will not forsake its nest when sitting, drive it out as often as you please; some will even suffer themselves to be taken out and put back again without leaving the nest. Nightingales might be made to frequent any place where there was a good cover of underwood for them, and plenty of insects, if hatched under any of the tribe to which they are most nearly related. A redstart would prove the best parent.'

Fishes travelling on Land.—The Doras costata, or Hassar, is one of those species of fishes which possess the singular property of deserting the water, and travelling over land. In those terrestrial excursions, large droves of the species are frequently met with during very dry seasons. When the water is leaving the pools in which they commonly reside, while most other fishes perish for want of their natural element, or are picked up by rapacious birds, the flat-headed hassars, on the contrary, simultaneously quit the place, and march over land in search of water, travelling for a whole night, as is asserted by the Indians, in search of their object. Mr. Campbell, of Sparta Estate, Essequibo, and his family, in an excursion to the sand-reefs, fell in with a drove of these animals, which were on their march over land to a branch of the Pomeroon. They were so numerous that the negroes filled several baskets with those they picked up. Their motion over land is described to be somewhat like that of the two-footed lizard. They project themselves forward on their bony arms, by the elastic spring of the tail exerted sidewise. Their progress is nearly as fast as a man will leisurely walk. The strong scuta or bands which envelope their body, must greatly facilitate their march, in the manner of the plates under the belly of serpents, which are raised and depressed by a voluntary power, in some measure performing the office of feet. The Indians say that these fishes carry water within them for a supply on their journey. There appears to be some truth in this statement; for it has been observed that the bodies of the hassars do not get dry like those of other fishes when taken out of the water: and if the moisture be absorbed, or they are wiped dry with a cloth, they have such a power of secretion, that they became instantly moist again. It is scarcely possible to dry the surface while the fish is living.—*Dr. Hancock. Zool. Jour.*

Fishes' Nests.—The hassars of both species, flat-headed, and round-

headed, make a regular nest, in which they lay their eggs in a flattened cluster and cover them over most carefully. They remain by the side of the nest till the spawn is hatched, with as much solicitude as a hen guards her eggs; both the male and female hassar (a species of Dorsa), for they are monogamous, steadily watching the spawn, and courageously attacking the assailant. Hence the negroes frequently take them by putting their hands into the water close to the nest; on agitating which the male hassar springs furiously at them, and is thus captured. The round-head forms its nest of grass, the flat-head of leaves. Both at certain seasons burrow in the bank. They lay their eggs only in wet weather. In a morning after rain occurs, numerous nests appear, the spot being indicated by a bunch of froth, which shows itself on the surface of the water, over the nest. Below this are the eggs, placed on a bunch of fallen leaves or grass, if it be the littoral species, which they cut and collect together—by what means seems rather mysterious, as the species are destitute of cutting teeth. It may possibly be by the use of their serrated arms, which form the first ray of the pectoral fins.—*Ib.*

Reanimation of Frozen Fish.—In winter, the Canadian fishermen erect huts on the ice of the lakes and rivers, and, cutting a hole in the ice, enclose it with a screen of straw, &c. to shelter themselves from the cold wind. Sitting inside the screen, they sink their hooks through the hole made in the ice. Amongst the other fish so caught are perch in abundance. After hauling them up, if thrown aside on the ice, they speedily become frozen quite hard. They then take them home, and place them in water near a fire; in a short time they began to exhibit symptoms of reanimation,—the fins first quiver, the gills open, the fish gradually turns itself on its belly, moves at first slowly about the basin, and at last completely revives and swims briskly about.—*Edin. N. Phil. Jour.*

Supposed Identity of the Whitebait and Shad.—The whitebait have hitherto been generally considered as the young of the shad, but in an article of the 'Zoological Journal,' No. XIV. this doctrine is combated by Mr. William Yarrell, F.L.S., who was led to investigate this subject by observing the early appearance (March) of whitebait in a fishmonger's shop; and, knowing that shads, which they were supposed to be, did not make their appearance till much later (May), he took up and persevered in a course of investigation which lasted from March to August, 1828. The specific distinction between the two fishes, on which he relies as of the greatest value, is the difference of their anatomical character, and especially in their number of vertebræ. 'The number of vertebræ in the shad,' he says, 'of whatever size the specimen may be, is invariably fifty-five; the number in the whitebait is uniformly fifty-six; and even in a fish of two inches, with the assistance of a lens, this exact number may be distinctly made out.'

Electrifying Mollusca.—A singular species of mollusca, found on the coast of Ceylon, has been presented to the Asiatic Society. It is reported by the natives of the island, and is much dreaded by them on that account, to have the power of benumbing or destroying the use of the hand of a person who touches it, resembling in that respect the Torpedo Raia and Gymnotus electricus. As no mention has been made of an animal of this description by any of the authors who have written on the natural productions of Ceylon, the account given by the natives of its properties is considered to require confirmation. From several circumstances in its anatomical structure, the species would appear to rank among the Asterias; but it differs materially in other respects from the species described by systematic writers, and is said to present a peculiarity of external form that does not belong to any of the mollusca.

Habits of the Leaf-insect.—The mantis, or leaf-insect, is one of the most remarkable for its external form of all the insect tribes in India. When alive and fresh it presents a striking resemblance to a blade of grass, differing in colour according to the season, being green and succulent in the rains, and in the dry weather so much like a withered straw, that they can with difficulty be distinguished. Dr. Adams, who has given an interesting account of the habits of these animals, says that this insect lies in wait for flies, which form his prey, with as much design as a cat or tiger. When a fly is sufficiently within his reach, he projects rapidly his armed paw; and, with unerring aim transfixing his victim, lodges it in the toothed hollow of the thigh, destined for its reception. After the fly is in his power, no time is lost in devouring it, commencing with the trunk, and in a few minutes swallowing the whole, the head and wings constituting the finishing morsel. In this manner he will destroy at a meal five or six large flies, which, in point of bulk, nearly double his own body. The structure of the forelimb is remarkably adapted for the purpose it has to serve. It is strong and muscular, provided with a claw at its extremity, likewise strong, horny, and sharp as a needle, and the groove in the last joints, with the double row of teeth or spurs on the margin, corresponding and locking closely into each other, like the fangs of the alligator. By means of these formidable weapons, the insect not only becomes destructive to others, but is employed to attack its own species; and in China, we are told, fighting the mantis forms the favourite amusement of boys, who carry them about in cages for the purpose.

On the autumnal Colouring of Leaves.—M. Macaire Prinsep has an interesting article on this subject in the fourth volume of the 'Mémoires de la Société de Physique et d'Histoire Naturelle de Genève.' Having observed that in the leaves which naturally cover each other in part, the uncovered portion is always the more quickly and more deeply coloured, he felt anxious to determine if the change of colour took place in darkness. On sheltering from the action of light, either the whole branches, or parts of leaves, he always found that all change of colour was prevented. If the entire leaf was placed in the dark, it fell off green; if only a part, the rest of the parenchyma changed colour, and the covered portion retained its original colour. If he placed in the dark leaves or portions of leaves which were yellow before reddening, the leaf fell off yellow, or the covered part retained that colour, while the rest became red; thus demonstrating the necessity of the action of light in all the stages of colouring. The colouring principle of leaves, M. Prinsep ascertains to be a resinous substance common to the leaf in its green and yellow state, with modifications of colour only. Having obtained a quantity of this substance from both green and yellow leaves, he observed that the difference which the two matters present were the solubility in the fat and essential oils of the green matter, and the insolubility of the yellow resin in these same menstrua, and the action of acids and alkalies. In fact, a prolonged abode, even in the cold state, of the yellow resin in the alkalies, brings it back to a beautiful green colour, and the action of heat accelerates this effect. It is then in all respects similar to the green substance, and becomes, like it, soluble in oils. On the other hand, all bodies capable of yielding their oxygen, as acids, or the employment of means which facilitate the combination of that gas, as the exposure to the air of the alcoholic solution, heat, &c. make the green substance pass to the yellow or red colour; so that the resin of the leaves which have undergone the autumnal colouring, seems to be nothing but green resin oxygenated, or having undergone a kind of acidification. M. Prinsep also observed, that if a yellow leaf of any tree whatever is allowed to remain some time in potash, it becomes of a beautiful green, without experiencing any sensible alteration. Ammonia, and all the alkalies, produce the same effect. On the other

hand, when a green leaf is left in an acid it becomes yellow or red, and potash restores the green colour, &c. M. Prinsep, following M. De Candolle, gives the name of chromule to this substance. MM. Pelletier and Cavantou, who were the first to observe the green substance, had given it the name of chlorophyle, which became inapplicable as a name for a substance common to the colouring principle both of green and yellow leaves. M. Prinsep draws the following general conclusions from his investigations of this subject: 1st, All the coloured parts of vegetables appear to contain a particular substance (the chromule), capable of changing colour by slight modifications; 2dly, It is to the fixation of oxygen, and to a sort of acidification of the chromule, that the autumnal change of the colour of leaves is owing.

The Nopal, or Cochineal Plant.—Mr. Thompson, in his work entitled 'Official Visit to Guatemala,' gives the following account of the plant. "The nopal is a plant consisting of little stem, but expanding itself into wide thick leaves, more or less prickly according to its different kind: one or two of these leaves being set as one plant, at the distance of two or three feet square from each other, are inoculated with the cochineal, which, I scarcely need say, is an insect: it is the same as if you would take the blight off an apple or other common tree, and rub a small portion of it on another tree free from the contagion, when the consequence would be that the tree so inoculated would become covered with the blight: a small quantity of the insects in question is sufficient for each plant, which, in proportion as it increases its leaves, is sure to be covered with the costly parasite. When the plant is perfectly saturated, the cochineal is scraped off with great care. The plants are not very valuable for the first year, but they may be estimated as yielding after the second year, from a dollar to a dollar and a half profit on each plant.

§ 3.—Medical Science.

Functions of Digestion.—A paper read to the Royal Society during its present session, by Dr. Philip, contains the following view of the digestive functions. Digestion requires for its due performance, both a proper supply of gastric secretion, and a certain muscular action in the stomach; the latter circumstance being needful for the expulsion of that portion of food which has been acted upon by the gastric juice. Nervous power is necessary for secretion; but the muscular action of the stomach being excited by the mechanical stimulus of the contents of that organ, is independent of the nervous power. After the removal of a portion of the eighth pair of nerves, the galvanic influence directed through these nerves will restore the secretion of gastric juice. But Messrs. Breschet and H. Milne Edwards have lately endeavoured to prove that the same effect results also from mechanical irritation of the lower portions of the divided nerves. Several circumstances which appear to have been overlooked by these gentlemen, invalidate the conclusions they have deduced from their experiments, namely, that a certain quantity of digested food will always be found in the stomach of the animal for five or six hours after the operation, and even after the lapse of ten or twelve hours, from its being less completely changed, and therefore expelled more slowly than in the natural state. The paper concludes with the recital of experiments made for the author by Mr. Cutler, in which the contents of the stomach of a rabbit, whose eighth pair of nerves, after excision, had been kept mechanically irritated, were compared with those of another rabbit in which the nerves had not been irritated, and of a third which had been left undisturbed. All those who witnessed the result of this experiment, among whom was Mr. Brodie, were convinced that the irritation of the nerves had no effect whatever in promoting the digestion of the food.

neither did it at all contribute to relieve the difficulty of breathing consequent upon the section of the nerves.

Microscopic Observations of the Blood.—The globules of the human blood observed under highly magnifying powers are discovered to congeal into flat circular bodies, and arrange themselves in rows, one body being placed partly underneath another, and in like manner as a pile of similar coins, when thrown gently down, would be found to arrange themselves. This curious effect is attributed to the vitality yet remaining in the blood, during the act of congealing. In order to make the experiment, it is necessary that the blood, as freshly drawn, be slightly and thinly smeared over the surface of a slip of crown, or window-glass, and be covered with a very thin slip of Bohemian plate-glass; and thus some slight inequalities in the thickness of the layer of blood between them will be produced, and which are necessary to succeed in producing the very curious appearances above mentioned. Highly magnifying powers are absolutely necessary to be employed in exhibiting this object.—*Tech. Rep.*

Method of stopping Hæmorrhage from Leech-bites.—Occasionally leech-bites, left to themselves, bleed excessively, even so much as to endanger life; and cases have occurred where all the usual means of stopping the issue of blood, when tried, have failed. The Marquis Ridolfi then says, that the application of the cupping-glass to the point from which the blood escapes is always successful. He uses a very small glass when the hæmorrhage proceeds from a single bite, and a larger one when it issues from several near to each other. Almost immediately on the application of the glass the blood forms a clot over the bite, which suspends the hæmorrhage. The formation of this clot takes place with great facility, even in subjects in whom the blood is very thin and aqueous. The glass is allowed to remain on for a few minutes, until the integuments become tumefied. Care must be taken in removing it not to disturb the coagulum, as only the fluid part of the blood should be emptied, and the glass is to be applied again and again, until the hæmorrhage has completely ceased.—*Med. Rep.*

Vaccination in London.—According to the last report of the National Vaccine Establishment, dated the 2nd of March, the number of persons who have died of small pox in the course of the last year, within the bills of mortality, amounts to 598; and the report states, that there is no reason to think that this distemper has abated any thing of its virulence, or that it is more controllable by the expedients of medical art than it was in the times of its more general prevalence; for that it still proves fatal to one out of three of those who take it in the natural way. The report further states, that more than 10,000 of the poor have been vaccinated in London and its neighbourhood since last year's report; and that from the records of the last year's experience of the Small Pox Hospital, it appears that no patient admitted there under small pox, after vaccination, had been vaccinated by any officer of the national establishment, whence it is presumed that when the operation has been performed with due care and intelligence, it is much less liable to be followed by small pox. The correspondence of the establishment with various parts of the world, which is represented as having become more extensive than ever, is stated to warrant the conclusion, that there is no increase in the proportion of cases of small pox after vaccination, and that the efficacy of the vaccine lymph is not weakened or deteriorated by transmission through any number of subjects in the course of any number of years.

Vaccination in Hungary.—According to official reports on the state of the cow pox in Hungary, it appears that there were vaccinated in the course of

the seven years preceding 1826, 1,144,539 persons: the expense of inoculation, reckoning for every child operated on with success, of poor from whom a forced contribution is exacted, 15 kreutzers, the same term, to 280,052 fl. 30 kr.

Cow Pox a degree of Small Pox.—A note communicated to the French journal 'Le Globe,' treats vaccination as the inoculation of a malady of the same nature, but of a different degree of intensity, as the small pox. The latter disorder is divided by the writer of the note alluded to into four degrees, to which he gives the names of La Variole, La Varioloide, La Varicelle, and La Vaccine. The vaccine he treats as a small pox of the lowest degree. Persons who are liable to take the small pox a second time, he says, have it in greater or less degree, according as their first attack was strong or weak: thus vaccination affords a degree of security according to the proportion in intensity which it bears to the small pox. This theory, he observes, gets rid of the strange anomaly presented in the view generally taken of this disorder by the fact of an affection of one kind acting as a preservative against an affection of a different nature. In support of his opinion on this subject, the author notices a curious fact communicated some years since to the School of Medicine at Paris, from a doctor of one of the western departments. This doctor, while the small pox was raging in his neighbourhood, having no vaccine virus at hand, thought of inoculating with virus drawn from the pustules of the varicelle. His experiment, many times repeated in the hospitals, even in the presence of magistrates, always and fully succeeded. The inoculation produced a local eruption of pustules, and all who were thus operated on escaped the small pox. In conclusion it is observed, that the varicelle and vaccination are similar in the two respects, that they are not transmitted by emanation, and that they produce only local eruptions.

Anatomical Experiments on the Ears of Birds.—The following curious facts are given in a number of the 'Revue Encyclopédique' as the results of the experiments of a French physiologist, M. Flourens, on the organization of the ears of birds. They were read to the Academy of Sciences of Paris in the course of last autumn. He ascertained that the membrane of the tympanum might be removed without affecting hearing; that taking the *stapes* out of the groove which forms the *fenestra ovalis* weakens sensation; and that the destruction of the pulp of the interior of the vestibule annihilates it. The section of the semicircular canals produced effects altogether unexpected. It did not appear to weaken the sensibility to sounds, but only to render it painful; while the movements of the animal, occasioned by the separation of the parts, were truly surprising. The section of the horizontal canal constantly produces a motion of the head from right to left, and *vice versâ*, and when the two horizontal canals are divided, this motion becomes so rapid and impetuous, that the animal loses its balance, and rolls over and over without the power of raising itself. If the semicircular vertical external canals be cut, a violent motion upwards and downwards takes place; the animal does not turn round, or roll over and over, but falls, often in spite of exertions to the contrary, on its back; and lastly, the section of the semicircular vertical internal canal produces violent motions upwards and downwards, but the animal in this case always falls forward on its bill, and tumbles round in that direction. These motions cease when the bird remains at rest; but as soon as it attempts to change its place they are renewed, and flight or walking is rendered totally impracticable. The section of all these canals induces violent and surprising motions of the head in every direction. These phenomena do not take place on simple destruction of the osseous envelope of the canals, unless the membranous canal and the pulp with which it is filled be also divided.

An extraordinary circumstance attending these experiments is, that the involuntary motions do not prevent the healing up of the wound, the animal from feeding as usual, and even getting fat. Still, however, the motions are continued, and M. Flourens has seen pigeons upon which he had operated, and afterwards fed with care, for many months, and even upwards of a year, fall into the peculiar motions and tumblings corresponding to the divided canal, whenever they attempted to change their position. In other respects the birds exercised all their functions, hearing and seeing, eating and drinking as usual.

Analysis of the Bath Waters.—According to experiments lately made by Mr. Walcker, and communicated to the 'Quarterly Journal of Science,' the component ingredients of the Bath waters are not precisely such as have been hitherto stated. They are chlorine, sulphuric acid, carbonic acid, potash, soda, lime, magnesia, oxide of iron, alumina, and silica. Besides these, the mineral water contains some extractive matter: its residue, when evaporated, being coloured, and containing an admixture of carbon, after ignition.

The following are the relative proportions of the ingredients first named, contained in 1000 grains:—

	Grains.
Potassa	0.02256
Soda	0.23591
Lime	0.56894
Magnesia	0.08175
Protoxide of Iron	0.00213
Alumina	0.00215
Silica	0.04610
Carbonic Acid	0.[illegible]699
Sulphuric Acid	0.85471
Chlorine	0.27017
	2.17051
From which are to be deducted	0.06104
As the equivalent of oxygen for 0.27017 of chlorine leaving	2.10947 gr.

§ 4. Agriculture and Rural Economy.

Necessity of Water to the Vegetation of Seeds.—Seeds, says an article in the 'Gardener's Magazine,' if kept perfectly dry, will never vegetate. They require, therefore, some kind of moisture, and that moisture must be supplied by *water*. Beans and peas may be kept moistened by olive oil and alcohol only, but otherwise under circumstances favourable to vegetation, without their showing the least symptom of germinating. Water, then, is an essential; the most appropriate quantity varies with the species of plant. If in excess it is more prejudicial than a total deficiency, since in the first case it excites decay, in the latter event the seed remains unaltered. That the first case ever occurs in practice, arises from the faulty cultivation of the soil; for, if properly drained, however retentive it may be, no natural deposition of moisture is ever too abundant or continuous.

Option as to Sex in Produce, in breeding Stock.—A French agriculturist maintains, in the 'Annales de l'Agriculture Française,' that in breeding stock a greater number of one sex than of the other may be obtained at the option of the breeder. The principle is, when most males are wanted, to strengthen the power of the male parents relatively to the strength of the females; and

when most females are wanted the contrary. The application to a flock of sheep is thus given. The farmer wishing a greater number of female lambs, is recommended to put very young rams to the ewes; and also, that during the season that the rams are with the ewes, the ewes should have more abundant pasture than the rams. When male lambs are chiefly to be obtained, strong and vigorous rams, four or five years old, are to be put to the ewes.

Green Crop System on the Continent.—On comparing the agriculture of the continent with this country, we are struck with the miserable manner in which the operations of the plough and harrow are conducted; but the great deficiency is a total ignorance of what we call green cropping on the large scale. It is true, that both potatoes and turnips are made use of in different countries, but they are never properly cultivated, and, consequently, never approaching to a full crop. In Flanders, Prussia, Germany, and in the Swiss cantons, there is no one who holds land but grows a portion of potatoes; but they are planted either by the hand on a flat surface, or put in with a spade, so close, that, instead of horse-hoeing, it is wonderful how they can get them hand-hoed; the consequence of which is, that the potatoes never reach the size of a common egg. Turnips are also cultivated, but in such a way, as to make a heavy or good crop out of the question. But the measure of bad farming is filled up by the slovenly rude method by which they thrash out the corn, still making use of cattle or horses (at least in all the southern parts of Europe) to tread it out, as we read in the Scriptures.—*Quarterly Journal of Agriculture.*

Rewards by Agricultural Societies.—The Lincolnshire Agricultural Society, on the 27th of August last, among other premiums, awarded the following. To William Jacklin (lived with J. S. Bennett, of Appleby, and his father-in-law, 23 years; had 24 children, and brought up 18): as the labourer in husbandry who has brought up the largest family without parochial relief, character being particularly attended to; 10 guineas. To William Sentence, of Barrowby (had 17 children, and 16 living): as the second labourer in husbandry who has brought up the largest family without parochial relief, character being particularly attended to; 5 guineas.

§ 5. Horticulture.

Proper time for sowing.—The time at which any ground may be raked with the greatest facility, is a good practical criterion to judge when it is most fit for sowing. In general, if clay does not predominate in its constitution, a soil rakes best just after it has been turned up with the spade. If clay does predominate, it usually rakes with most facility after it has been dug two or three days, and then immediately after a gentle rain. But it is certain that the sooner seed is sown after the soil is dug for its reception, the earlier it germinates. In the droughts of summer, water is often required to newly sown beds. Such application must not be very limited or transitory; for, if the soil is only moistened at the immediate time of sowing, it induces the projection of the radicle, which, in very parching weather, and in clayey caking soil, withers away, and the crop is consequently lost from the want of a continued supply of moisture.

Proper depth for sowing.—Every kind of seed has a particular depth below the surface, at which it germinates most vigorously, and securing to it the most appropriate degree of moisture, of oxygen gas, and of warmth. From a quarter of an inch to two inches beneath the surface, appears to be the limits for the seeds of plants usually the objects of cultivation; these, however, must vary for the same seeds in different grounds and countries. It must be the least in aluminous soils, and dry climates.—*Gard. Mag.*

Cultivation of Dahlias.—A correspondent of the Magazine just quoted gives the following rules for the cultivation of this root:—It should be planted about the time of planting early potatoes for a first crop, but no sooner. It grows well in a rich light soil of almost any kind. In dividing the root, it is advisable to leave, at least, two eyes to each plant, cutting through the neck or crown; the spring is the most preferable time for dividing them, although some do it on taking them up in the autumn. Those who possess a hot-house should put each part into a pot of six or eight inches in diameter, with some good rich mould, so as the crown may just appear at the top of the pot; then place them in the green-house, where they will soon make good plants; and, when all danger from frost is over, they may be turned out into holes prepared for them. A common cucumber frame may be successfully used where there is no hot-house.

Preservation of Plants from Slugs.—A gardener, in a communication to the same Magazine, recommends for preserving cabbages and cauliflowers from slugs, the spreading well cut chaff round the young plants under hand-glasses, and some round the outside of the glasses. The slugs in their attempt to reach the plant, find themselves immediately enveloped in the chaff, which prevents their moving, so that in the morning hundreds of disabled slugs may be found round the outside of the glasses, and be destroyed.

The Tamarind Tree.—This tree is common in almost every part of India and the West Indies, and grows most luxuriantly in all the eastern islands. The soil of Java is said to bring the fruit to very high perfection; and those of the dependent island of Madura are reported to be the best. It is considered dangerous by the natives of India to sleep under this tree, and its presence has a deteriorating effect on grass and herbs. Its thick and lofty stem is terminated by spreading branches, bearing tufts of alternate, smooth, bright green leaves, abruptly pinnate; the short lateral branches are terminated by flowers which are in simple clusters; the calyx is divided into four straw-coloured segments, and the petals are three, rather yellow, and beautifully variegated with red veins; the seeds are roundish, somewhat angular, flattened, hard, polished, with a central circumscribed disk at each side, and lodged in a quantity of a soft pulp. The fruit is cooling and laxative; but while it gratefully allays the thirst of ardent fever, it must be taken in large quantities to ensure the latter effect, and is then apt to produce flatulence. The stones of the fruit are prescribed by the physicians in dysenteric complaints, and for menorrhagia. It is very much adulterated in commerce, and the deceit is very difficult to find out.

English Poison.—The Water Hemlock.—Cicùta virosa; Umbelliferæ. This plant, commonly called the Long-leaved Water Hemlock, is said to be by far the most active of the poisonous plants of Great Britain, but it is, fortunately, rather scarce. The root is perennial, the stem is very large, hollow, leafy, and branched; and the leaves are biternate, and of a bright green colour; the flowers are in large, many-rayed umbels, and are very small. It is supposed by Haller and many others to have yielded the celebrated Athenian poison.—*Gard. Mag.*

Iron Hot-houses—heating by hot water.—The heating of hot-houses and fruit-walls by means of hot water conveyed through tubes, instead of smoke flues, appears to be coming into fashion. The principal advantage is a more equable temperature, dispersed through the whole range of the influence of the heating process. At Woburn Abbey are iron hot-houses, heated by hot water. From observations on a pine stove of this description, as to what it would lose in heat between 8 o'clock in the evening and 8 o'clock in the morning, in one of the coldest nights in January last (the 25th),

it was ascertained, that at 8 o'clock in the evening the thermometer in the open air stood at 13°, that in the pine stove after the fire was made up for the night at 65°, and next morning at 55°. The temperature of the atmosphere in a wooden house, as compared with that of an iron house, in neither of which there was any artificial heat, was ascertained, when that of the iron house was 3° higher than the other, owing, as it was conjectured, to the laps of the glass being puttied in the iron house. At any rate the loss of heat, by the conducting qualities of iron is but small. Not a single pane had been broken in these iron houses, either by contraction or expansion.

§ 6. Domestic Economy.

Cream Gauge.—A cream gauge is a glass tube, exactly cylindrical, of about 1 inch in diameter, and 10½ inches long. On its outside is a graduated scale, 3 inches long, and each inch is divided into ten equal parts. The scale commences at exactly the height of 10 inches from the bottom of the tube, it is numbered, and counts downwards. Being filled up to 10 inches high with new milk, of a proper temperature, it is set by in the dairy for 12 hours, in which time the cream will all of it have risen to the top of the tube, if the cow be a proper one from which to make butter.—*Waistell on Agr. Build.*

Indications of Wholesomeness in Mushrooms.—Whenever a fungus is pleasant in flavour and odour, it may be considered wholesome; if, on the contrary, it have an offensive smell, a bitter, astringent, or styptic taste, or even if it leave an unpleasant flavour in the mouth, it should not be considered fit for food. The colour, figure, and texture of these vegetables do not afford any characters on which we can safely rely; yet it may be remarked, that in colour, the pure yellow, gold colour, bluish pale, dark or lustre brown, wine red, or the violet, belong to many that are esculent; whilst the pale or sulphur yellow, bright or blood red, and the greenish, belong to few but the poisonous. The safe kinds have most frequently a compact, brittle texture; the flesh is white; they grow more readily in open places, such as dry pastures and waste lands, than in places humid or shaded by wood. In general, those should be suspected which grow in caverns and subterraneous passages, on animal matter undergoing putrefaction, as well as those whose flesh is soft or watery.—*Brande's Jour.*

To make Kitchen Vegetables Tender.—When peas, French beans, and similar productions do not boil easily, it has usually been imputed to the coolness of the season, or to the rains. This popular notion is erroneous. The difficulty of boiling them soft arises from a superabundant quantity of gypsum imbibed during their growth. To correct this, throw a small quantity of subcarbonate of soda into the pot along with the vegetables, the carbonic acid of which will seize upon the lime in the gypsum, and free the legumes from its influence.—*Bulletin des Sciences.*

To Improve Dried Figs.—These fruits, when they are brought to table, are commonly covered with a scurf, composed of a mealy, sugary substance, very disagreeable to the teeth. A correspondent says that the way to get rid of this scurf, and render the figs as plump and clear-skinned as when they are newly gathered from the tree, is, first to keep them in a cool and rather moist cellar, for twenty-four hours before using; and, secondly, just before presenting them at table, to put them into a receiver, and exhaust the air. After remaining there two minutes, they should be taken out, and gently brushed, when they will be found perfectly plump and clear-skinned. —*Gard. Mag.*

Dinner Food for Invalids.—Roast beef and roast mutton is the most eligible of all food for dinner. The proper time of the day for the dinner of

invalids should be early—at all events, not later than two o'clock in the afternoon. Veal and lamb are both of them improper for the valetudinarian state, upon this principle—they are more indigestible, and not easily assimilated to nourishment. It is most true, that young animals not yet arrived to perfection, are unwholesome; and although some people in health have stomachs so strong that they can digest any food, yet to an invalid it is very hurtful. Food in which the nourishing properties are highly concentrated, is not proper for the stomach of an invalid. Fish, in order to be preserved fresh for the market, are allowed to linger and die, instead of being put to death in health, as every living thing intended for food ought to be; and this circumstance very much alters its nature and properties as food; and, probably, is one cause why, with some people, fish is said to disagree, by exciting disturbance in the alimentary canal. It is less nutritive than the flesh of warm-blooded animals, and, of course, is less stimulant to the circulation. Where the complaint is attended with febrile excitement, fish is more proper than flesh; and in all cases where the digestive powers are sunk, it is proper, as being easily converted into chyle. Fish, in proportion to its bulk, may be said to be almost all muscle; and it is readily known if it be in high perfection, by the layer of curdy matter interposed between its flakes. It often happens that those parts of fish, viz. the pulpy, gelatinous, or glutinous, which are considered the most delicious, are the most indigestible, and unfit for the stomach of an invalid. Lobster sauce is a very bad addendum; the best accompaniment is vinegar. Most shell-fish are very indigestible, and, from the indisposition caused occasionally by eating them, the idea of their being poisonous has been created. Oysters, when eaten in large quantities, often cause great disturbance: shrimps and muscles have produced death; but whether from their indigestibility or poisonous quality, is doubtful.—*Manual for Invalids.*

Wholesomeness of Coffee.—The general effect of coffee upon the nervous coat of the stomach is, unquestionably, a gentle stimulant; and, as most substances of that class, has, to a certain extent, a tonic power, it is not hesitated to be recommended to invalids whose powers of digestion have been debilitated by stimulants of a more powerful character, such as fermented liquors, wine, spirits, &c. The custom of taking coffee after a late dinner, and just before retirement to rest, is bad; because its stimulant property upon the nerves of the stomach exerts a power destructive to sleep—it promotes an activity to the mind, and gives a range to the imagination which prevents self-forgetfulness, that sure harbinger of repose.—*Ib.*

§ 7.—Mechanical and Useful Arts.

Escape from Fire.—Dr. Birkbeck, in a recent lecture on fire-escapes delivered at the London Mechanics' Institution, noticed the difficulty which lies in the way of escape on occasion of fire, from the circumstance that the smoke renders the air completely suffocating, and the combustion deprives it of the power of supporting life; and individuals are therefore occasionally rendered incapable of making their escape even when there is no fire to obstruct them. He recommended among the means of escape which inhabitants of houses may always have in readiness for themselves, an apparatus, invented by Lieut. Cook, consisting of a cylindrical canvass bag, which is kept in its proper form by a circular wooden bottom, and a strong ring of iron at the top. This bag is suspended by a rope, which passes over a pulley, hooked to an iron bolt previously fixed to the brick-work; and the end of the rope being thrown into the street, is seized by the persons below, who lower the bag with the individuals it may contain through a circular hole in the bottom of a balcony which is attached to the window. Even

without assistance from below a person may lower himself in safety by winding the rope round the balcony; and as the whole apparatus lies in a small compass, it may be kept in a room without inconvenience. In treating of the various inventions intended for facilitating escape in cases of fire, and mentioning with applause the contrivances of many ingenious individuals, Dr. Birkbeck said, that the rope-machines of Mr. Rider and Mr. David Davies were admirable contrivances of the kind, and, with slight exceptions, were nearly perfect. That of Mr. Rider consisted of a strong hempen rope, sallied with worsted, like a common bell-rope, and having at its upper end a swivel ring, with a spring catch, which might be instantly fixed to a bed-post, a chest of drawers, &c. By means of this machine, a person descended in perfect safety from the gallery to the platform, holding by the rope, and standing upon a kind of iron stirrup, with three rings through which the rope passed. These rings were not placed perpendicularly above each other, but stood in such directions as to cause a considerable degree of friction, and to prevent the too rapid descent of the person using the apparatus. A contrivance was connected with it, for instantly fixing a secure noose under the arms, to be used when the friction-seat attached to the machine (by which a person might even descend, holding another in his lap) was not employed. Another appendage to the apparatus was a ramp iron (to be fixed into the sill of the window), with a fork over which the rope was intended to pass, to prevent it from receiving injury while in use.—*Manual of Science and Literature.*

Quantity of soft Metals raised in England. Duty performed by Steam-Engines.—According to the tables of the produce of the soft metals raised in Great Britain, as given in a new work entitled 'Records of Mining,' the quantity raised in a year is as follows:—copper 12,635 tons; lead 47,000 tons; and tin 5,316 tons. The same paper, in examining the question of the amount of improvement which has taken place at various times in steam-engines, shows that as much power is now obtained from one bushel of coal, as in the earliest periods was to be had from seventeen bushels.

The following extract from a table, showing the average duty reported in each year of all the engines working, and the average duty of the best engines at each period, gives the improved results after an interval of 15 years:—

Years.	Engines working.	Average duty of the whole.	Average duty of the best Engines.
1813.	24	19,456,000	26,400,000 tons
1828.	54	37,100,000	76,763,000

Best form for Steam-Vessels.—According to the results of inquiries recently made in America, into the prow of least resistance for steam-boats, it appears that the greatest velocity, fourteen miles an hour, was acquired by a boat 'modelled nearly like the bowl of a spoon, with a very raking cut-water rising up in a uniform curve, and all the curves upon the bottom regular, and without abrupt angles.' But 'other forms had superior properties at lower velocities:' in other words the prow of least resistance at a high velocity, was not that of least resistance at a low one.—*Edin. New. Jour. of Science.*

Proportion of Power to Velocity in Steam-Boats.—The following table of the power necessary to give a steam-boat different velocities, has been published by Mr. Tredgold.

3 miles per hour,	5½ horses' power.	7 miles per hour,	69 horses' power.
4	13	8	102
5	25	9	146
6	43	10	200

Model of newly-invented Suspension Bridge.—In the National Repository now exhibiting, is a model of a Suspension Bridge, adapted for situations where the water is too deep for the erection of piers, and where the expanse of water is too great to be passed over by single chains, without other support than is afforded at the abutments.

The piers are supported upon rows of properly constructed boats, whose buoyancy is sufficient to bear the weight; that is, without their being submerged by the pressure when the tide falls to its lowest point, and the boats are confined in this situation by the mooring chains, which are attached to the heads of the piles sunk perpendicularly into the earth. By this arrangement, when the tide rises, the piers cannot ascend and lift the bridge, which would be the case were the boats not tied down to the extreme point of low water, while the bridge is supported by their buoyancy in either case. It is likewise deserving of notice, that the mooring chains being fixed in an oblique direction to the piles, cause a lateral pressure of the piles against the earth, and consequently enable them to resist a much greater strain than has heretofore been obtained in similar works under water. [What is to prevent the sinking of the boats, piers and all, under the additional pressure of high water?]

French Stones suited for Lithography.—At a recent sitting of the French Academy of Sciences, MM. Chevalier and Langlumé presented a fragment of flinty stone, containing a drawing from which the presenters took impressions by a process only known to themselves. Other fragments of stone proper for lithography have been found at Chaville near Versailles, and in the environs of Vermanton (department of the Yonne). MM. Chevalier and Langlumé expressed their opinion, that these stones, and others to be found in France, especially in the departments of the Ain, of the Aisne, of the Arriège, and the Aube, would serve as well for the purpose of lithography as the materials brought from Germany. They announced their readiness to make experiments, and give their opinions gratuitously on any specimens that might be sent to them.

Vapour Baths of American Indians.—The vapour bath was in use among the Beothuks, or Red Indians of Newfoundland, a race now almost, if not quite, extinct in that island. M. Cormack, in a fruitless journey in search of these Red Indians, found the remains of one of these baths. The method used to raise the steam was by pouring water on large stones made very hot for the purpose, in the open air, by burning a quantity of wood around them; after this process, the ashes were removed, and a hemispherical frame-work closely covered with skins, to exclude the external air, was fixed over the stones. The patient then crept in under the skins, taking with him a birch-rind-bucket of water, and a small bark-dish to dip it out, which, by pouring on the stones, enabled him to raise the steam at pleasure. The vapour-bath was chiefly used among them by old people, and for rheumatic affections.—*Edin. New Phil. Jour.*

Substitute for Locks in Chinese Canals.—Locks are unknown in China, although some of the canals in that country are constructed on different levels; and their method of passing boats from one level to another is worthy of attention. The levels are connected by inclined planes constructed of hewn stone. These inclined planes, in some instances, connect levels differing fifteen feet in elevation. In passing from the upper to the lower canal, the boat is raised out of the water, and launched over the inclined plane, the last part of the operation, of course, requiring no great labour, as the friction over the plane retards the descent of the boat. But in passing from the inferior to the superior canal powerful engines are required. These consist of capstans, from which ropes are passed round the stern of the boat. The efforts of a hundred men are sometimes required to effect the elevation of a loaded boat.—*Boston Journal of Science.*

§ 8. Antiquities.

Egyptian Manuscript History.—Among the papyri in the museum of Turin, the professor Seyffarth asserts that he has found Manetho's original History of Egypt. The papyrus, he says, according to the writing, belongs to the time of the first Ptolemies, and Egypt had no earlier and no later historian than Manetho. The papyrus in question is the sketch for a more complete history of Egypt, and contains many corrections, small pieces of papyrus being pasted over the writing in some places, with altered passages written upon them. It forms a complete sketch of the history of Egypt, on a papyrus, measuring from fourteen to eighteen feet long, and two feet high, closely written on both sides, in hieratic characters. According to the common chronological reckoning, the narrative commences with the reigns of the gods. Athom and Vulcanus first ruled Egypt; and they were succeeded by Ammon Sol, and so on to Osiris, Typhon, Horus, Thouth, Anubis, and Horus II., during an interval of 13,917 years, as stated by Manetho. Thouth alone is stated to have reigned 3936 years, while a reign of only three centuries is ascribed to Horus. Then follow the heroes, and other sovereigns of Memphis, which, with the former reigns, make out a period of 23,200 years. After this fabulous history, the real dynasties commence with Menes, the first king. The manuscript states from what city each dynasty sprang; of how many kings it consisted; the number of years they reigned; and these enumerations are followed by a list of the names of all the kings, accompanied by short historical remarks. The number of years, months, and even days, to which the reigns of each of the Pharaohs extended, is set down.—*Weekly Review.*

Egyptian Pen-and-Ink Drawing.—Among the curiosities examined by professor Seyffarth, in the museum of Turin, he found a papyrus, which he represents as a perfect master-piece of pen-and-ink drawing. The subject is a high priest in full costume, followed by a boy carrying a parasol. This picture, among its other claims to the attention of the curious, is the earliest specimen of art in which shoes are represented; for the sandals, which project in front, and turn up at the points, exactly resemble the shoes of the Chinese. He also found the drawing of an Egyptian ram, which, he says, shows that the breed differed from ours; and that the kind of sheep still common in Egypt, of which there is a specimen in the royal menagerie at Stupinici, is the same that was indigenous in that country under the Pharaohs.

Mr. Seyffarth also describes a papyrus of a curious character, and which, with that above-mentioned, he says, shows that the Egyptians had attained greater perfection in the art of design than is generally imagined. This papyrus measures from sixteen to twenty feet in length, and one foot in height, and is full of curious drawings and caricatures, with hieratic inscriptions round them. The drawing, the colouring, the actions of the figures, the comic humour displayed both in the pictures and inscriptions,—all is extraordinary and masterly. One of these caricatures represents, in a series of drawings, a conflict between apes and cats. The apes, who appear to have given the enemy battle, are all armed. Their left wing consists of archers, and on their right are the heavy infantry, with shields and lances. In the back-ground, their commander is seen advancing in a war chariot, drawn by two dogs. The cats take to flight, leaving the field strewed with their killed and wounded. Having retired to their fortress, they bravely defend themselves with their claws. The apes, however, procure ladders, and storm the fortress, which throws the poor cats into dismay. Mr. Seyffarth affirms, that the greater portion of these pictures are in the Grecian style of execution, and excel any thing of the kind that antiquity has transmitted to us.—*Ib.*

Destruction of Egyptian Monuments.—The magnificent antiquities of Egypt suffer constant demolition from the wantonness and negligence of the government and people. The letters of the members of the French scientific expedition, now engaged in exploring that country, have enumerated eleven ancient monuments which have recently disappeared. In one instance M. Champollion, making a deviation from his route to visit the temple of Contralato, arrived on the spot ten days after its total destruction. A similar disappointment was experienced by him shortly afterwards with regard to the temple of Elythia;—a loss the more regretted, as that edifice was a monument of the time of Sesostris. Of two temples in Elephantis which are now entirely lost, one, the larger of the two, is considered to have been the most perfect monument of ancient Egypt: besides these, the greater part of the small temple of Ombos has been recently carried away by the Nile.—*Le Normant's Letters.*

Deification of Cleopatra and Cæsarion by the Egyptians.—At Hermonthis, on the Nile, is a temple which affords an example of the state of debasement into which the Egyptian worship had fallen previously to the subjugation of the country by the Romans. A small chamber behind the sanctuary of this temple is discovered, by a hieroglyphic legend never before interpreted, and now deciphered by M. Champollion, to be the *accouchement chamber.* Cleopatra, under the name and form of the Egyptian Venus, is there represented in the act of giving birth to a new *Horus*, who is no other than Cæsarion, the son of the Egyptian queen by Julius Cæsar. At the door of this chamber is represented the *accouchée*, with Ammon advancing towards her: the young mother, still weak, and in pain, is supported by the goddess *Suan*, the Egyptian Lucina. The father of the gods salutes the newly-born infant. In another part, the latter, now full grown, visits the principal deities, and is invested by all of them with their respective attributes. These visits terminated, the new Horus becomes the Sun-Ammon himself. He is seated as master on the symbolical lotuses, and Typhon, the emblem of evil, or of matter, acts as his guard, and appears in the act of keeping off the profane by his hideous aspect, and by the brandishing of the knives with which he is armed. The sculptures were executed in a feeble manner. The temple was never finished, and both in its construction and ornament it bears evident marks of precipitation.

Newly-discovered Mosaics.—The collection of antiquities at Munich has recently received an addition in an ancient work in Mosaic, presented to the king of Bavaria by the duchess of Leuchtenberg, on one of whose Italian estates it was discovered. The part as yet to be seen is 7½ square feet, and represents, as in a painting, the sun as a god, standing in the zodiac, and the earth as a female figure, lying down surrounded by her various attributes.—*Zeitung für die Elegant Welt.*

§ 9. Fine Arts.

Ancient Ornaments.—An elegant and very useful work has been recently published by Carpenter and Son, under the title of a 'Selection of Architectural and other Ornaments, Greek, Roman, and Italian; drawn from the Originals in various Museums and Buildings in Italy.' The work consists of five parts, each part containing five impressions from lithographic drawings. The collection of ornaments embraces specimens of the most esteemed nations and ages—the Greek, the Roman, and Italian of the fifteenth century. They are greatly varied, most of them are extremely elegant, and many display a playfulness and fancy which render them well calculated for adoption in articles of gold, silver, or bronze, or even of household furniture. A few pages of introduction and explanations of the plates in English and French constitute the letter-press. The authors are Mr. Jenkins and

Hosking, architects, who have taken the pains to make the drawings on stone themselves. Hence what may be lost in boldness and freedom of delineation is gained in fidelity.

Bust of the Emperor Alexander by Thorwaldsen.—A landowner of the district of the town of Kharkof, in Russia, M. Sherbinine, has the good fortune to possess a bust of the Emperor Alexander, executed in Rome by the first sculptor of Europe, the celebrated Thorwaldsen. The resemblance is said to be very strong, and was made after three sittings, which the emperor gave to the artist at Warsaw in 1820. The bust is executed in Carrara marble, and has been recently brought home to the residence of the owner.

Academy of Fine Arts at Mexico.—An academy for gratuitous instruction in the fine arts exists at Mexico. Some hundreds of young people of all ranks, colours, and races of men—the Indian and the mongrel sitting by the side of the white man; the son of the artisan rivalling the children of the great men of the country—assemble every evening in large halls well lighted with Argand lamps. The instruction is not confined to the drawing of landscape and the figure, but the means of improving the national industry, and of diffusing among the artisans a taste for elegance and beauty of form have been studied: and while some are engaged in drawing from models and living figures, others are employed in copying designs of furniture, candelabras, and other ornamental articles in bronze, &c.—*Humboldt.*

§ 10.—General Literature and Education.

Itinerating Library in Scotland.—Many of our readers are probably unacquainted with the fact of the existence of an institution in Scotland for the establishment of itinerating libraries, of which some account is contained in the number for April of the 'Gardener's Magazine,' in the shape of extracts from the fifth report, for 1826 and 1827, of the East Lothian Institution. The object of this institution, as appears by the report, is to furnish all the towns and villages of the county with libraries of useful books. The books are arranged into divisions of fifty volumes, which are stationed in one place for two years, where they are issued gratuitously to all persons above twelve years of age, who agree to take care of them; after this period they are removed, or exchanged with other divisions. The institution is supported by the subscriptions and donations of benevolent individuals, societies, and annual reading subscribers of three shillings and upwards, to whom is reserved for a certain time the use of the new books. On the first establishment of the institution no such reservation as this was made, and the greatest number of annual subscribers then was 8: the number after that arrangement, was, in 1822, 64; 1823, 61; 1824, 54; 1825, 89; 1826, 110; 1827, 135. The principal stations for new books are at Haddington and North Berwick. These exchange publications, and thus the subscribers to each are furnished with the use of a much greater number of recent publications than could have been procured by any other arrangement. A branch of the Haddington library is especially devoted to books on agriculture and rural economy, for the use of which an additional subscription of two shillings is required. This entitles the subscribers to the use of the new books on such subjects for two years; after which the same books are to be issued gratuitously to farm servants, grooms, foresters, and smiths and wrights engaged in the construction of implements of husbandry, and others interested in agricul-

The prisons, Sunday-schools, and merchant vessels on going to sea, supplied with books by this society. 'The principle,' says the report, already been adopted by various seamen's societies; it is a part of the of the Committee of the General Assembly of the Church of Scotland for improving the Highlands, and also of the Inverness Association for

promoting education in the Highlands. A society was formed in 1826, in Edinburgh, for supplying Mid-Lothian with such libraries. It has been introduced into Ireland, British America, and the United States, and its supporters may reasonably hope that its economy and efficiency will recommend its adoption wherever it is known.'

Manual of Science and Literature.—A new weekly publication, to which we have referred for several facts in our journal, has lately appeared, under the title of 'Manual of Science and Literature,' having for its principal object to give abstracts of the lectures delivered at the London Mechanics' Institution. Accordingly, in the first six numbers we find accounts of the interesting lectures of Dr. Birkbeck on fire escapes, and on the application of animal power; of Mr. Dakin on galvanism; and of Mr. Hemming on pneumatics.

Besides these principal characters of the new periodical, the work is not wanting in interesting original communications on subjects of science, literature, and the useful and fine arts. Among these may be mentioned a notice of the improvements now going on in London, and a particular account of the London Bridge. The work is very creditably got up.

Education of Spanish Refugees.—An institution, highly honourable to all parties concerned in promoting and establishing it, has been recently formed in London for the instruction of the children of the unfortunate Spanish refugees now in this country. The idea of forming this kind of college originated with the Señor Nuñez de Arenas, who, having volunteered to instruct a class of his young countrymen in mathematics at his own residence, found the lessons attended not only by the youths whose education was in progress, but by many emigrants of maturer years, who, while they refreshed their knowledge of the sciences, found an agreeable diversion to the melancholy reflections engendered by their situation. This circumstance being communicated to the other refugees in town distinguished by their acquirements, a plan was devised for extending the advantages derived from the lessons of M. Arenas to the other branches of knowledge, and the refugee committee having come forward with necessary assistance to set the project on foot, and the trustees of the Mechanics' Institution having generously volunteered the use of their establishment, a Spanish college has been actually instituted, and upwards of two hundred names of students are enregistered. The instruction is gratuitous to refugees and their children, and to the members of the Mechanics' Institution. But the classes are open to other students on payment for the respective courses.

Diffusion of Knowledge in Spain.—By a decree dated the 18th of December, the king of Spain grants permission to the directors of the Royal Cloth Manufactory at Alcoy, to establish in that town, at their own expense, schools for the sciences and mechanical arts, in which the pupils might be instructed in those branches of knowledge which would tend to make them perfect in their profession. The objects of instruction to be divided into four classes, *viz.* 1st. Castilian grammar, orthography, writing, and elements of arithmetic, and mercantile letter-writing; 2ndly, arithmetic and the principles of algebra, as applied to commerce, and geography; 3dly, pure and descriptive geometry, mechanics, physics, and geometrical drawing, as applied to the useful arts; 4thly, chemistry, as applied to the same arts. The motives which influence king Ferdinand to grant this indulgence, as they are set forth in the decree, are more enlightened than the principles by which the conduct of his majesty is generally influenced. The document concludes with an assurance 'that his majesty has pleasure in giving to the industrious inhabitants of Alcoy such a proof of the esteem which they merit, and in granting the protection they request for the encouragement of their

dustry, the advancement and prosperity of which depends on the propagation of useful knowledge, which his majesty is desirous of effectually promoting, not only in the town the immediate object of his decree, but throughout the whole extent of his dominions.'—*Gazeta de Bayona.*

Universities of Germany. Number of Students.—The number of names entered as students in the University of Munich for the late winter half-year amounted to 1716, over and above 60 in the ecclesiastical seminary, making together 1776; of whom 1589 are natives and 187 foreigners.

In Heidelberg, for the winter half-year, the number of students inscribed was 727, (259 natives, 468 foreigners.) In Freiburg (Brisgau,) 628, (natives 528, foreigners 108.) The University of Dorpat has at present 567 students. In Kiel, in the summer half-year 1828, the number of students was 370.

In the scholastic year 1828-7, the number of doctors' degrees conferred by the University of Vienna was 27, *viz.* 23 in medicine, and four in chemistry.

Education in Silesia.—The number of pupils in different gymnasia of Silesia, in the scholastic year 1826, was, in Breslaw 670; in Glatz 325; in Gleiwitz 210; and in Leobschütz 404.

History of Alfred the Great.—There was published in Hamburgh, in 1828, a 'History of Alfred the Great, taken and translated from Turner's 'History of the Anglo-Saxons,' by Dr. Fred. Lorentz, together with the 'Lodbrokar-Quida,' in the original Islandish text, with a translation in verse.

German Translation of the Loves of the Angels.—The 'Loves of the Angels,' by Mr. Moore, has been translated into German by Balduin, and published in Berlin. The verse, says the 'Zeitung für die elegante Welt,' is flowing, and the book is prettily got up.

Persian Library of Ardebil.—Among other trophies which the Russian arms obtained in the last war with Persia, was one highly interesting to the learned; namely, the library of Ardebil, the town in which the Persian schahs used to be crowned. This treasure fell into the hands of the count Suchtelen, on the taking of Ardebil. It was founded in the year 1013 of the Hegira, when the schah then reigning, Abbas I., deposited the manuscripts collected by him in a mosque, which he erected to the memory of his grandfather Scheikh Sophi, on the very spot in which that founder of the dynasty of the Sophis was buried. This rare biblical treasure was escorted to St. Petersburg by the body guards of the emperor, at the command of his majesty, and in due time will be open to the public.—*Leipsiger Literatur Zeitung.*

French Poetess.—A new 18mo. volume, by Mademoiselle Delphine Gay, has lately made its appearance in Paris. 'Le dernier Jour de Pompeii' is the principal poem. Mademoiselle Gay, it appears, has made the tour of Italy in search of fresh inspiration from the country of Corinne. 'In this land of enthusiasm and genius, however,' says 'Le Globe,' 'she has not sought for inspirations too vigorous, nor has she fallen into that dreaming misticity, which is inhaled on the shores of lakes, and on the summits of mountains. Beauty and her own heart, happily for us, have every where engaged her.' 'It is true,' we are assured, 'that when she touched her lyre near some ancient temple, the venerable monument was forgotten for the priestess; and that her improvisations at Tivoli had all the solitude of a Chaussée d'Antin Soirée. Yet she has remembered what she was and what she should be, simple, sensible, and graceful; she has even made some improvement, her verse is more correct, and her metre more harmonious.'

The French paper above quoted prefers the occasional pieces in this volume to the 'Last day of Pompeii.' It quotes one of much feeling and simplicity, *Le Malheur d'être Aîné*. 'The last day of Pompeii,' says the critic, 'is a composition sufficiently cold;' but he quotes the following passage, and points out the second line as a very happy verse

> Tandis qu'un orphelin, dès long-temps sans appui
> *Malheureux de n'avoir à trembler que pour lui,*
> Et jaloux de garder son chaste solitaire,
> Adjut une inquiétude à sauver son vieux père.

Some of our readers may not join in the admiration of the critic for this second line, which we deem a mere laboured conceit.

Education in the Milbank Penitentiary.—In the general report of the committee for the management of this establishment, it is stated that from the reports of those members of the committee who have attended the quarterly examinations of the prisoners in their respective schools, it appears that the male prisoners, such as came into confinement without any knowledge of letters, have on the average acquired, under the system of instruction now pursued, the ability to read and write with ease, and a perfect knowledge of the Church Catechism, with its explanations, in about two years. The females have advanced at a somewhat slower rate, owing to a less perfect state of discipline, which, from peculiar circumstances, had been maintained in that department.

§ 11. Naval and Military Economy.

Revolving Masts for Ships.—Dr. Birkbeck, at a lecture on the application of animal power, delivered at the Mechanics' Institution, exhibited a model of an invention by Lieut. Shuldham, of a method of adjusting the sails of a ship, not by connecting numerous pulleys with the masts and yards, but by causing the masts themselves to revolve in any required direction, and to carry the sails along with them. This novel plan has not yet been reduced to practice by the inventor, except in small craft for his own amusement; but the Admiralty have consented to place a vessel under his directions, in order that the experiment may be tried on a larger scale. —*Manual of Science and Literature.*

Improvement in the fixing of the Mariner's Compass.—A patent has been granted in the United States to Mr. Lemuel Langley, for an improved mode of fixing the mariner's compass. This mode consists in setting the compass-box within the planking of the deck of a vessel. The hole is cut through into the cabin, and is made with a glass top and bottom, so that the card can be seen as perfectly in the cabin as upon deck. This is one of the advantages which the inventor had in view. Another consists in placing the instrument out of the reach of shot. The compass-box is made translucent, or semi-transparent, in consequence of which it may always be lighted from below, and will be much more plainly seen at night than when lighted in the ordinary way.—*Franklin Journal.*

King's Ships launched during 1828.—Bombay, 84 guns, in India, early in the year; Hotspur, 46 guns, at Pembroke in October; Speedy, 8 guns, cutter, at ditto, in summer; Nimrod, 20 guns, at Deptford, in ditto; Pearl, 20 guns, at Colchester, in ditto; Sparrow, 10 guns, cutter, at Pembroke, in ditto; Comet, 16 guns, at ditto, in ditto; Snipe, 8 guns, cutter, at ditto, in ditto; Royal Adelaide, 110 guns, at Plymouth, in July; Clyde 46 guns, at Woolwich, in October.—*United Service Jour.*

King's Ships at present Building.—In the various dock-yards the ships above 50 guns, at present building, are as follows:—*Deptford.*—Worcester,

62 guns:—*Woolwich.*—Trafalgar, 120; Thunderer, 84; Boscawen, 80; Chichester, 52:—*Chatham.*—Waterloo, 120; London, 92; Monarch, 84:—*Portsmouth.*—Royal Frederick, 120; Neptune, 120; Indus, 80; President, 52:—*Plymouth.*—St. George, 120; Nile, 92; Hindostan, 80; Valiant, 76; Liverpool, 52; Jamaica, 52:—*Pembroke.*—Royal William, 120; Rodney, 52:—*Bombay.*—Calcutta, 84:—*Kingston, Canada.*—Canada, 104;—Wolfe, 104. There are besides, 75 vessels of various sizes in different states of progress in the several dock-yards. Of these 14 are of 46 guns.—*Unit. Serv. Jour.*

Coast Lights on a new Principle.—In a paper published in the last number of 'The United Service Journal,' Mr. Martin, the celebrated painter, details the particulars of a method invented by him, of guiding vessels by night as well as by day, through the shoals which beset the English coast, by means of suspended light-towers. Mr. Martin recommends that, after ascertaining by boring the depth of the sand, a broad triangular foundation shall be laid in the following manner, as described by himself:—The material of the foundation, to be hollow metal boxes, each furnished at one end with two projecting portions, and at the other with two corresponding holes, so that each box may be firmly locked into that on either side of it; the boxes are hollow, that they may be more easily managed by the workmen, and are less expensive, but they will be sufficiently heavy, because each box, as it sinks, will be immediately filled with sand.

One hollow triangular layer of these boxes, thus inseparably locked in each other, must, in the interval of one low tide, be deposited upon the sand: this layer will have sunk to a certain depth at the ebbing of the next tide, when another triangular layer of these boxes must be dropped upon the first; this additional weight would cause the first layer to sink still deeper: and over these, at a very low tide, fresh layers of boxes must be sunk, until the lowest has reached the firm sand, or other substance, and will sink no farther.

Into every hollow box as it descended the sand would enter; it would also completely fill the hollow triangular foundation, and being protected by it from any external influence, would add to its stability. When so many layers of boxes have been sunken that the upper layer lies within three or four feet of the surface of the sand, and will not sink farther, the foundation would be completed. A light-tower, circular in form, as that least likely to be affected by the influence of the winds and waves, about ten feet in diameter, might then be suspended from the junction of three wrought iron legs, inserted into the foundation, and strongly united at their apex, thus assuming the form of a pyramid, with an equilateral triangular base.

Upon rocks lying beneath the water, the hanging tower could be adopted with still greater advantange: in such a situation, the triangular frame, or foundation, would not be necessary, as the legs of the triangle could be fixed firmly into the rock.

§ 12.—Geography, Statistics, &c.

Austrian Empire.—The eleventh part of a new 'Atlas of Europe,' published at Leipsick, is devoted to the geography of the Austrian empire, which it describes as comprised within the 41° 20′ and 51° 2′ N. lat. and extending over 18° 21′ of longitude, containing 12153.622 geographical square miles, and a population of 31,624,888. It enumerates nine chains of mountains, the Adriatic sea, with four bays, several lakes, eight great rivers with their tributary streams, 19 canals, and 12 different nations and languages.

Tobacco Monopoly in France.—In France, as in most countries of the continent, both of the ancient and new world, the manufacture and sale of

tobacco is monopolised by the government. Their agents purchase the plant, and manufacture it, and it is dispensed to the public from shops appointed by the government, which thus obtains by this arrangement no less patronage than profit. The produce of this monopoly to the French government amounts to 45,000,000 fr. or nearly 1,800,000*l.*

Proportion of male and female Births in France.—From the best founded calculations, says M. Poisson, in a memoir read to the French Academy of Sciences, it appears that in France the proportion of male to female births, formerly stated to be as 22 to 21, is more justly reckoned as 16 to 15. It is mentioned as a circumstance worthy of remark that in the births of natural children the proportion is different. From 1817 to 1822 the number of these births throughout France amounted to 198,955 boys and 199,282 girls, which gave a proportion of about 20½ to 19½, from which it would appear that in births of this class the number of girls is nearer that of boys than in births in wedlock. The only circumstances in which any influence of this nature can be traced, besides that of legitimacy, is the residence in great towns, which has also the tendency to diminish the number of male births.

Quantity of Woods in France.—According to M. Moreau de Jonnès, the author of an essay which obtained a prize offered by the Royal Philosophical Society of Brussels, on the question of the alterations produced in the physical state of countries by the destruction of forests, the woods in France amounted, in 1750, to more than a fourth of the surface of the whole country; in 1788, to a seventh; and in 1814, to not quite a twelfth of that surface. Thus, within sixty-four years, 5000 square miles of the woods of France must have disappeared. In England, according to the author's estimate, the woods amount to only one twenty-third of the surface.

Revenue of Spain.—A controversy has arisen between a Spanish writer in the 'Constitutionel' Paris Journal, and the 'Gaceta de Bayona,' a Spanish paper, published in Bayonne, on the amount of the revenue of the Spanish monarchy. The 'Constitutional' states the total at 293,538,227 reals, (£2,935,382.) The 'Gaceta' above mentioned asserts that the revenue amounts at the least to 572,298,227 reals, or £5,722,982.

Charitable Society in Spain.—A charitable society for succouring the inmates of the prisons has been re-established in Pampelona. This charity was founded in 1805, but on the breaking out of the war in 1808, its beneficent labours were interrupted, and had not since been resumed. The object of the society was to give employment to the prisoners, to ameliorate their allowance of provision, and to furnish clothing and religious and moral instruction. It is represented to have produced during its short existence most beneficial effects. Instances are referred to, in which prisoners who, in the heat of passion, had subjected themselves to the pain of confinement, by their industry contributed to the maintenance of their families, and many were restored to the path of virtue, and on their release became industrious and useful citizens. The governor and commander-in-chief of the province has been the chief promoter of the re-establishment of the society, to which the bishop of the diocese has also contributed 17,000 reales vellon (£170.)

Population of Cologne and Bonn. Eau de Cologne.—Dr. Jacob, in a recent work on Cologne and Bonn, and their environs, states the amount of the population of the former place, in 1827, at 57,022, including a garrison of 4523 men. In the same year, the number of manufactories of Eau de Cologne amounted to 14, which exported 500,000 bottles by water-carriage, besides a vast quantity, not ascertained, by land. Bonn, according to Dr.

Jacob, contains 1,110 houses, besides churches and public buildings, and 11,387 inhabitants, including 697 soldiers of the garrison; and in the summer of 1828, 886 university students.—*Allgemeines Repertorium*, 1829.

Catholic Clergy of Switzerland.—At the beginning of 1827, the catholic clergy throughout the different cantons of Switzerland consisted of four bishops, 17 collegiate churches, with a corresponding number of provosts, (nine of which belonged to the canton of the Tessino,) 120 monasteries—59 for monks and friars, and 61 for nuns, and seven capuchin convents. These religious houses are all contained within 16 cantons, exclusive of Neufchatel, which has only a capuchin convent, that at Landeron. Berne, the largest canton of all, has only a single monastery.—*Hertha.*

Proportion of Population to Clergy in various Cantons of Switzerland.—The canton of Freybourg, to a population of 83,700 souls, has 279 monks, 231 nuns, and 247 members of the secular clergy; total, 757, or one in 110½ inhabitants. Deducting from the total population of the canton that of the district of Morat, which contains 5100 protestants, with 5 pastors, or one clergyman to 1020 souls, the proportion in the part of the canton purely catholic would be one ecclesiastic to 103 inhabitants. In the town of Freybourg there are, to a population of 6460 souls, 45 secular clergy, 141 monks, and 149 nuns, giving a total of 335, or one to every 18 inhabitants. Of the monks 67 are jesuits, 21 Franciscans or cordeliers, 30 capuchins, and 13 Austin friars. There are 202 parish priests.

In Soleure, to a population of 52,930 souls, there are 98 monks, 123 nuns, and 127 secular clergy; total 348, or one in 152. In the town of Soleure, to a population of 4000 souls, there are 65 clergy, or one in 61⅞ inhabitants. In this canton, where there are no jesuits, the Benedictines are the most numerous order of monks—they amount to 31, belonging to the monastery of Maria Stein. The number of parish priests within the canton is 72. The heads of schools amount to 114, or one to 429 inhabitants.

The canton of Zug, with a population of 14,800, contains 38 monks, 63 nuns, and 99 secular clergy; total 210 or one in 70½ inhabitants. In the town of Zug, of which the population is 2810, the number of ecclesiastics is 54, or one to 51⅞. The parish priests are to the number of 34.

The population of the canton St. Gall amounts to 157,700, of whom 99,300 are catholics, and 58,400 protestants. The catholic secular clergy consist of 187 individuals, or one to 609 inhabitants. The monks, of whom 26 are Benedictines, amount to 49, or one in 2027. The number of nuns is 124, or one to 801 inhabitants. Total of the catholic clergy, 370 individuals, or one to 276 inhabitants. The protestant clergy is composed of 70 persons, or one in 833 protestant inhabitants.

The canton of Geneva had, at the end of 1827, a population of 53,560 inhabitants, of whom 37,720 were protestants, and 15,840 catholics. The protestant clergy consists of the venerable company of pastors of the church of Geneva, composed of the bench of pastors of the city, 26 members, and of that of the country 24 members, making a total of 50 individuals, of whom 32 only perform pastoral functions, the rest are lay professors or are abroad. The dissenters or mummers, to the number of about 280, have 3 ministers, or one to 93 persons; the German protestant church has one minister; the German Lutheran church one; the Anglican church one; making altogether a total of 38 protestant clergy, or one in 1019 inhabitants. There are four catholic priests in the city of Geneva, and 20 in the various parishes of the canton; total 24, or one to 660 catholic inhabitants.

The population of the canton of Vaud, at the end of 1827, consisted of 178,883 souls. There were 3032 catholics at Lausanne and other places, with four parish priests, or one clergyman to 758 catholic laymen. The

protestant clergy consisted of 170 members, or one minister to 1034 protestant inhabitants.—*Bibliotheck der nieuwesten Weltkunde.*

General Protestant Consistory of Warsaw.—Pursuant to an imperial ordinance, of the date of the 28th of February, 1828, an evangelical general consistory for the churches and schools of the Augsburg and reformed religion has been established at Warsaw in lieu of the two—the evangelical Augsburg, and the evangelical reformed consistory—formerly existing. The decree was published on the 26th of April of last year, and the general consistory was solemnly installed on the 2nd of July following.—*Allgemeines Repert.*

Asylum for the Blind in Denmark.—Seventeen years since a benevolent society established in Denmark an institution for the cure of the blind, the funds at that period amounted to 1500 bank dollars. An appeal to the public soon produced a sum of 7000 dollars. At first the establishment received only 12 young people, the number increased by degrees, and at present the inmates amount to 80, and the government gives yearly a considerable aid to the funds. The capital of the institution has moreover been augmented by charitable contributions to the sum of 54,000 dollars, so that now, together with the assistance received from the government, the income is sufficient to answer the current expenses.—*Blatter fur Literarische Unterhaltung.*

Recovery of Health in India.—A paper in the last number of the Edinburgh New Philosophical Journal urges the advantage of a residence in the hill districts of the Himalayah, for recovering the health of individuals injured by the climate of Bengal. The district of the mountain to be resorted to is the elevated range of the Himalayah mountains, which rises above the Deyrah Doon. The centre part of this range, called Mussooree Tibi and Landour, has for some years been resorted to by invalids houses were erected there by them, and an experimental physic garden for rhubarb, &c. established. It enjoys a delightful climate, presenting as great a degree of equability of temperature from summer to winter, and from day to night, as can be desirable. In summer, the temperature is low, and all accumulation of heat is prevented by the coolness of the breeze which ascends from the valleys. The transition to the rains makes hardly any difference in the temperature, and though the weather is gloomy occasionally, it is pleasant and healthy. In the month of October, or at the conclusion of the rains, the sky is so clear, the air so mild and still, that the climate is said to be perfectly delightful. This clearness and purity of the atmosphere continues throughout the months of October and November. The approach of the cold is so gradual, and its degree so moderate, as to be well calculated to brace the system, when improved by a previous residence among the hills. The hills have been visited for several years for the recovery of health, and the Mussooree range has been resorted to for the last four years, during which time individuals of both sexes have resided there during the hot season and rains, and the recovery of invalids was general. Dr Burke, the author of the article alluded to, which is addressed to the director-general of the army medical department, recommends an establishment at the same spot of an invalid depot for the king's troops in India. A district equally favourable for the recovery of health, says the editor of the journal above mentioned, has been discovered in the Madras presidency. It is on a table-land thirty miles in extent, in the Neelgherry hills, between the Malabar and Coromandel coasts. To this district, those invalids formerly sent home to Europe are now removed for the recovery of their health. A similar favourably situated spot has been lately met with to the northward of the Bombay presidency, whither invalids are to be sent.

Population of South America.—The following table of the relative population of the new republics, with regard to the number of inhabitants to the square league, is given in a recently published work, Thomson's 'Official Visit to Guatemala.'

	Square leagues.	Population.	Inhabitants to the square league.
New Spain	75,830	6,800,000	89
Guatemala	16,740	2,000,000	119
Venezuela	33,700	900,000	29
Granada	58,250	1,800,000	
Peru	12,150	1,400,000	115
Chile	14,240	1,100,000	77
Buenos Ayres	126,770	2,000,000	15

The Cataract of the Niagara.—The falls of the Niagara are the great point of attraction to travellers and idlers in North America. They are annually visited by several thousand strangers of all nations; for whose accommodation three large hotels have been built in the immediate neighbourhood, with every facility for the full enjoyment of the stupendous spectacle.

The superiority of this Fall consists principally in the immense volume of water it discharges. In a picture, it is tame and formal; but in nature these qualities are lost in the general effect. The best approach, for effect, is from Lake Erie, and in that case the rapid transition from the placid lake-like character of the river above, to the vehemence and reverberating roar of the Falls, makes a remarkable impression on the spectator.

The Falls are twenty-one miles from Lake Erie, where the river issues. In that distance it varies in width from three quarters of a mile to upwards of seven miles; this, however, is an extraordinary breadth, and only exists in one spot: in general the width exceeds but little a mile. The number of islands between the head of the river and the Fall are twenty-eight. The most considerable of these is Grand Island, five miles from Lake Erie: its dimensions are seven miles and a half long and six and a half broad. The rest are mere islets, no one of them exceeding one mile and a quarter in length, and several of them less than a quarter of a mile long. At Chippewa, two miles and a quarter from the Falls, a change in the stream is perceptible. It becomes sensibly diminished in breadth. On the British shore, a ripple in the accelerated current is perceived; and at Bridgewater, one mile lower down, it dashes and foams over a succession of ledges. Below this, the water moves with equal swiftness, but smoothly, over pebbly shallows, until it precipitates itself into the great chasm of the cataract. On the American shore, the rapids begin at a point nearly corresponding with those on the Canadian side. As they approach the brink of the Falls, they leap from ledge to ledge with great fury. On the Canadian shore lofty steeps, 150 feet high, overlook the cataract. The American banks have no steeps, but ascend along the river side in a richly wooded swell.

At the cataract the Niagara plunges at once into a rocky chasm, 156½ feet deep, 960 yards broad at this place, and prolonged east-north-east, almost at right angles with the former course of the river, for seven miles. This descent takes place obliquely to the direction of the river, and is divided into three distinct falls by Iris Island, and the islet on its right. These are named the 'Horse-shoe Fall,' 'Ribbon, or Montmorenci,' and the 'American, or Schlosser' Falls, respectively. The whole line of subsidence is 1200 yards long; but the chord of this, joining its extremities, is 960 yards long. The Horse-shoe Fall occupies about one half of the brink, and the base of Iris Island, and the American Fall, each about a quarter. The Ribbon Fall, and an islet adjoining, take up each ten yards of the same line.

The American Fall is 162 feet high. Stairs have been constructed a little

below the Falls on both sides of the river, to facilitate the descent of visitors down the sides of the chasm.—*Quar. Jour. of Science.*

Lakes of the United States of America.—The dimensions and depths of the six principal lakes of the United States are as follows:—

Lakes.	Length.	Breadth.	Depth.
Ontario .	180 miles . .	40 miles . .	500 fathoms.
Erie . .	270	60	200.
Huron . .	250	100	900.
Michigan .	400	50	Unknown.
Green Bay	105	20	Unknown.
Superior .	480	109	900.

Milbank Penitentiary.—From the annual Report of this establishment for the last year, it appears, that on the 31st December, 1827, there were 471 male prisoners, and that 177 had been received during the year. Of the whole of these, 12 had died, and 83 had been discharged, leaving a total number remaining on the 31st December, 1828, of 553; of female prisoners there were 113 in the establishment at the close of 1827, 74 had been received during 1828, three had died, 40 had been discharged, and one had been sent to Bethlehem, making a total number of females remaining in the Penitentiary at the beginning of this year, 143. The earnings of the prisoners during the year are valued at 4191*l.* 13*s.* 6*d.*; *viz.* of the males, in manufacturing, 3102*l.* 15*s.*, of the same as wardsmen, cooks, and bakers, 347*l.* 2*s.* 6*d.*, of the females in needle-work 311*l.* 19*s.* 6*d.*, as wardswomen, cooks, and laundry-women 429*l.* 18*s.* 6*d.* After deducting allowances to prisoners, 4th on manufactures, 8ths on wages, and to officers 4th on manufactures, the profit arising to the establishment, and employed towards defraying its expenses, amounted to 2561*l.* 0*s.* 10*d.* on the manufactures, and 582*l.* 15*s.* 9*d.* on the wages. The net prison expense amounted to 19,194*l.* 10*s.* 8*d.*, to which is added 5,180*l.* 9*s.* 7*d.*, the cost of a new lodge erected under the direction of Mr. Smirke. Out of 83 convicts, *viz.*, 62 males and 21 females who had received his majesty's pardon, between the re-opening of the prison and the 31st of December, 1827, the prisoners who have actually received gratuities for one year's good conduct, after they quitted the prison, under the regulations contained in the rules of the Penitentiary on that head, are 43; *viz.* 33 males, and 10 females; and there are eight others, *viz.* seven males and one female, who are ascertained to be in respectable situations, and going on well, though they have not claimed the reward. Two males have died since their release from the prison. Three males and four females have committed fresh offences, and three males are believed to be leading a disorderly or disreputable life; 13 males and six females are considered as doubtful characters; and one male, who is gone to sea, makes up the 83.

Number of Lawyers in England and Wales.—The new law list contains the names of 1034 barristers, 138 counsel under the bar, conveyancers, and special-pleaders. There are 283 pages of names of *London* attornies, and on an average, 32 names on each page, making 9056 total amount. There are 25½ pages of names of *Country* attornies in England and Wales. Taking the average number of names in each page at 106, which will be found to be pretty correct, we get 2667. Thus we arrive at rather a curious fact, *viz.* that the attornies in the metropolis alone bear a proportion of 7 to 2, when compared with the gross amount of attornies in England and Wales, London excepted. The whole amount of lawyers in England and Wales, according to the foregoing statement, is 12,895.

MONTHLY METEOROLOGICAL JOURNAL,

From March 21, 1829, *to April* 20, 1829.

51° 32′ 30″ N. 8′ 30″ W.

Mar. and April.	Lunations.	Thermometer. Mean Alt.	Barometer. 9 hour.	Winds		Atmospheric Variations.				Prevailing Modification of Cloud.
				A.M.	P.M.	9 h. A.M.	9 hour.	9 h. P.M.	During Night.	
21		44.5	29.82	E.	E.	Fair, Cl.	Fair, Cl	Clear	Fair	Cumulus.
22		46.5	.74	—	—	—	—	Fair, Cl	—	Cirrostr. Cum.
23		42.5	.59	E. H.	E. H.	—	Clear	—	—	— —
24		37.75	.64	E.	E.	—	—	Clear	Frost	Cumulus
25		35.5	.64	—	—	Clear	—	—	—	—
26		41.5	.68	S.E.	S.E.	Fair, Cl.	Fair, Cl.	Fair, Cl.	—	Cirrostratus.
27	h. 7 19AM ☾	43.5	.68	E.	E.	—	—	Clear	—	— Cumulus.
28		41.5	.40	S.	S.E.	Clear	Clear	Fair, Cl	Rain	—
29		44	.66	N.E.	N.E.	Rain	Fair, Cl.	Moist	Moist	—
30		44	28.91	—	—	Moist	—	—	Fair	—
31		38.5	.90	—	—	—	—	Rain	—	—
1		34	29.00	N.	S.W.	Fair, Cl.	—	Snow	—	Cumulus.
2	h. 10 21PM ●	33	.14	N.	N.W.	Snow	—	Fair, Cl.	—	—
3		37	.36	N.W.	W.	Fair, Cl.	—	—	—	—
4		45.5	.40	S.W.	S.W.	—	—	Rain	—	Cum. Nimbus.
5		48.5	.02	—	—	—	Shrs.	—	Rain	— Cirrostr
6		47.5	28.84	—	—	—	—	Shrs.	Fair.	— Nimbus.
7		44.5	.80	W.	W.	Rain	Fair, Cl.	Rain	—	— —
8		43.75	.96	—	—	—	—	Shrs.	Rain	Cumulus.
9		41.75	.84	—	—	—	Rain	Fair, Cl.	—	— Cirrostr.
10	h. 2 7 AM. ☽	45.75	29.04	S.W.	S.W.	Fair, Cl.	Fair, Cl.	Shrs.	Fair	Cumulostr. Nim.
11		49	.26	—	S.	Clear	—	Rain	Rain	Cumulus. —
12		50	28.90	S.W.H.	S.W.H.	Rain	—	Fair, Cl.	—	
13		56	.74	S.	S.	—	Shrs.	—	Fair	— Cirrostr.
14		51.5	.32	—	S.W.	—	Fair, Cl.	Rain	—	— —
15		50 75	.65	S.W.H.	S.W.H.	Shrs.	Shrs.	Fair, Cl.	—	— —
16		43.75	.84	E.	S.W.	Rain	Rain	Rain	—	Cirrostratus.
17	h. 6 22PM. ○	50	29.34	S W.	—	Fair, Cl.	Fair, Cl.	Fair	—	Cum. Nim.
18		51.5	.50	—	—	—	—	—	—	— —
19		45.75	.45	W.	W.	—	—	Shrs.	—	— —
20		46	.45	N.W.	N.W.	—	—	Fair, Cl.	—	— —

Highest temperature at noon since March 20, 57°. Mean Temperature, 42°. Mean Atmospheric pressure, 29.33.

Strong SW. wind on the 12th and 13th inst. Tempestuous from 11½ hour P.M. of the 14th to 5 hour P.M. of the following day.

THE JOURNAL OF FACTS,

JUNE, 1829.

§ 1.—Natural Philosophy.

M. Raspail's Opinion as to Active Molecules.—In a note to the 'Magazine of Natural History' of last month, Mr. Bakewell, on the subject of the molecules of organic bodies, quotes the opinion of M. Raspail, a French naturalist, who has taken much interest in the inquiry respecting the active molecules in the grains of pollen, and who will not admit that these granules are organized bodies. He says they are minute resinous concretions formed in the fluid ejected from the pollen: when the drop is evaporated they do not change their form; whereas, after evaporation, all animalcules collapse. These resinous granules were almost instantly dissolved when a drop of alcohol was applied to them. Respecting the spontaneous motion supposed to be found in all inorganic substances, M. Raspail says he has never discovered the smallest trace of it.

Mr. Bakewell, in alluding to the opinion of Dr. Brewster, as given in the 'Edinburgh Journal of Science,' and which we recorded in abstract in the last number of our Magazine, says, that it would have been more satisfactory if Dr Brewster had also stated the result of his own observations. On the motions of inorganic molecules, the Doctor considers the question decided by the antecedent improbability of their existence. Mr. Bakewell says, he concurs in that opinion with Dr. Brewster, from having attentively examined various mineral substances, but, he observes, that a naturalist so eminent as Mr. Brown should be answered by facts, and not by conjectures; and the more so, he observes, as Dr. Brewster's opinion, in the same paper, respecting a planetary motion of the molecules, will by many be deemed as improbable as Mr. Brown's opinion of their possessing spontaneous motion.

Comparison of the Light of the Sun with that of the fixed Stars.—In the 'Philosophical Transactions' for the year 1767, a suggestion is thrown out by Mr. Michell, that a comparison between the light received from the sun and any of the fixed stars might furnish data for estimating their relative distances; but no such direct comparison had been attempted before the time of Dr Wollaston, whose observations on the subject were communicated to the Royal Society in a paper read on the 11th of December. Dr. Wollaston was led to infer, from some observations which he made in the year 1799, that the direct light of the sun is about one million times more intense than that of the full moon, and, therefore, very many million times greater than that of all the fixed stars taken collectively. In order to compare the light of the sun with that of a star, he took as an intermediate object of comparison the light of a candle reflected from a small bulb about a quarter of an inch in diameter, filled with quicksilver, and seen by one eye through a lens of two inches focus, at the same time that the star or the sun's image, *placed at a proper distance*, was viewed by the other eye through a telescope. The mean of various trials seemed to show that the light of Sirius is equal to that of the sun seen in a glass bulb, one-tenth of an inch in diameter, at the distance of 210 feet; or that they are in the proportion of one to ten thousand millions: but as nearly one half of the light is lost by reflection, the

real proportion between the light from Sirius and the sun is not greater than that of one to twenty thousand millions. If the annual parallax of Sirius be half a second, corresponding to a distance of 525,481 times that of the sun from the earth, its diameter would be 3·7 times that of the sun, and its light 13·8 times as great. The distance at which the sun would require to be viewed so that its brightness might be only equal to that of Sirius, would be 141,421 times its present distance; and, if still in the ecliptic, its annual parallax in longitude would be nearly 3″; but if situated at the same angular distance from the ecliptic as Sirius is, it would have an annual parallax in latitude of 1·8″.—*Phil. Mag.*

Indications of Spring.—The following table of the indications of Spring has been communicated to the 'Magazine of Natural History.' The table is the register of sixty years' observations, made by Robert Marsham, Esq., at Stratton-Hall, situated nearly in the centre of Norfolk. The earliest date recorded is the year 1735, and the latest observation appears in 1800. The *least* variations are in the time of the appearance of the migratory birds, and the hatching of young rooks. The *greatest* range is in the blossoming of the turnip, the appearance of the yellow butterfly, and the singing of the thrush.

	Earliest.	Latest.	Greatest Difference observed in
Thrush sings	1735, Dec. 4.	1766, Feb. 13.	56 years— 81 days.
Nightingale sings	1752, April 7.	1792, May 19.	59 years— 42 days.
Churn Owl sings	1781, April 29.	1792, June 26.	46 years— 58 days.
Cuckoo sings	1752, April 9.	1767, May 7.	51 years— 29 days.
Ring Doves coo	1751, Dec. 27.	1761, Mar. 20.	47 years— 83 days.
Rooks build	1800, Feb. 2.	1757, Mar. 14.	53 years— 40 days.
Young Rooks fly	1747, Mar. 26.	1764, April 24.	52 years— 29 days.
Swallows appear	1736, Mar. 30.	1797, April 26.	62 years— 27 days.
Frogs and Toads croak	1750, Feb. 20.	1771, May 4.	57 years— 73 days.
Yellow Butterfly appears	1790, Jan. 14.	1788, April 17.	36 years— 93 days.
Snowdrop appears	1778, Dec. 24.	1795, Feb. 10.	65 years— 48 days.
Turnip flowers	1796, Jan. 10.	1790, June 18.	55 years— 129 days.
Wood Anemone blows	1790, Mar. 16.	1784, April 22.	30 years— 37 days.
Hawthorn leaf	1759, Feb. 11.	1764, April 22.	59 years— 70 days.
Hawthorn flowers	1750, April 13.	1799, June 2.	59 years— 50 days.
Sycamore leaf	1750, Feb. 22.	1771, May 4.	57 years— 71 days.
Birch leaf	1750, Feb. 21.	1771, May 4.	52 years— 72 days.
Elm leaf	1779, Mar. 4.	1784, May 6.	47 years— 63 days.
Mountain Ash leaf	1779, Mar. 5.	1771, May 2.	43 years— 57 days.
Oak leaf	1750, Mar. 31.	1799, May 20.	54 years— 50 days.
Beech leaf	1779, April 5.	1771, May 10.	53 years— 35 days.
Horsechestnut leaf	1763, Mar. 10.	1771, May 2.	47 years— 52 days.
Spanish Chestnut leaf	1794, Mar. 28.	1770 May 12.	36 years— 45 days.
Hornbeam leaf	1794, Mar. 7.	1771, May 7.	40 years— 61 days.
Ash leaf	1779, April 2.	1772, May 26.	36 years— 54 days.
Lime leaf	1794, Mar. 19.	1756, May 7.	43 years— 49 days.
Maple leaf	1794, Mar. 26.	1771, May 7.	34 years— 53 days.

Action of the Pressure of Fluids.—Mr. Downes, in a recent lecture on hydrostatics and hydrodynamics at the London Mechanics' Institution, after alluding to the many proofs extant which show the error of supposing that the Romans were ignorant of the fact that fluids always rise to the level of their source, enforced the necessity of attention to the strength of the pipes used for conveying water from a great distance over irregular surfaces, a purpose for which the proper materials, not the knowledge of the principle, were wanting to the Romans. Mr. Downes showed that the pressure of fluids increases according to the depth, and consequently a much greater pressure must be exerted on the interior surface of a pipe situated in a valley, than

on one which passes over a hill. The lower pipes should therefore be made strong enough to resist this increased pressure: but if the more elevated ones should be of equal strength, a great waste of material would take place, while on the contrary, if the whole of the pipes should be only just strong enough to resist the pressure on those which occupy the highest place, the lower pipes would be inevitably burst. For the same reason a vessel intended to contain a large quantity of fluid should be made of a somewhat conical form, its thickness gradually increasing from top to bottom, in proportion to the increased pressure which its sides have to resist. Mr. Downes, in the same lecture, corrected the popular error which prevails respecting the pressure sustained by flood-gates, which is supposed to increase with the quantity of water lying against them; while, in reality, the pressure depends solely on the *depth* of the water with which they are in contact, without any reference to *quantity*.—*Manual of Science and Literature.*

Temperature of Wire connecting the opposite Poles of a Galvanic Pile.—In a paper communicated to the French Academy of Sciences in December last, and since published, M. Becquerel announces the result of experiments made by him with a view to determine the temperature of divers points of a wire traversed by an electric current. It is a well-known fact, that when the two poles of a voltaic pile are connected by a short wire, a proper charge will make the wire red hot in the middle. In explaining this phenomenon, it has been admitted that the temperature was equal at all points, but that the extremities being the first to feel the effects of refrigeration in consequence of their contact with the battery, the middle would show symptoms of a higher temperature. M. Becquerel, in his experiments, in order that the cooling of the extremities by their contact with the battery might have as little effect as possible, used a long wire. The result proved that the temperature increases progressively from each end towards the middle: and consequently, that the cause which gives rise to an electric current, of which the intensity is constant at each point of the wire, acts as an accelerating power in the developement of heat.—*Bull. Univ.*

Expansion of Substances by Heat.—The 'Manual of Science and Literature,' in an article on the expansion of bodies by heat, gives the following Table, to show the absolute dilatation in length of several generally used substances, by being heated from 32° to 212° Fahrenheit.

Glass Tube	.0008613	Silver	.0019086
Platina	.0008842	Tin	.0021729
Iron	.0011820	Lead	.0028483
Steel	.0012395	Zinc	.0029420
Gold	.0014660	Glass from 32 to 212	.0008613
Copper	.0017182	—— —— 212—392	.0009182
Brass	.0018667	—— —— 392—572	.0010111

Expansion of Liquids in bulk.

Alcohol	.11	Water saturated with common salt	.05
Nitric Acid (sp. gr. 1.4)	.11	Water	.046
Fixed Oils	.08	Mercury	.018
Oil of Turpentine	.07	——— apparent expansion in glass	.015432
Sulphuric Æther	.07		
——— Acid (sp. gr. 1.85)	.06		
Muriatic Acid (sp. gr. 1.137)	.06		

Cause of the unvarying degree of Saltness in the Waters of the Mediterranean.—On examining the contents of three bottles of water, taken up at about fifty miles within the Straits of Gibraltar, and from a depth of 670

fathoms, it was found to have a density exceeding that of distilled water by more than four times the usual excess; and accordingly it left upon evaporation more than four times the usual quantity of saline residuum. The result of the examination of this specimen has been stated by Dr. Wollaston to accord completely with the anticipation that a counter-current of denser water might exist at great depths in the neighbourhood of the Straits, capable of carrying westward into the Atlantic as much salt as enters into the Mediterranean with the eastern current near the surface. If the two currents were of equal breadth and depth, the velocity of the lower current need only be one-fourth of that of the upper current, in order to prevent any increase of saltness in the Mediterranean.—*Phil. Mag.*

Means of obtaining Nitrate of Tin, or the Protonitrate.—This substance is successfully employed in some dye-houses in dyeing scarlet. It may also, says M. Chevreul, be used with advantage in the preparation of the purple precipitate of Cassius. 'The Dictionnaire Technologique,' after observing that this salt has such an avidity for oxygen that it is difficult to unite its protoxide with the nitric acid, and also to maintain the combination of the two bodies, gives the following methods of obtaining it. Bring the acid into contact with the tin in a laminated state, or in the form of ribands, the acid being previously diluted with water until it marks about 4° or 5° of the areometer. Having carefully enclosed it in a well-stopped vessel, leave it to act for several days. By degrees the metal passes into a protoxide, which dissolves without the extrication of much gas; nitrate of ammonia is afterwards found in the liquid, and which is supposed to be formed thus:—Part of the oxygen has been furnished by the water, and another part by the nitric acid, when completely decomposed; this afterwards becomes mixed with azote, and which finally unites with the hydrogen, to form the ammonia.

The protonitrate of tin can be obtained more pure and concentrated, by bringing the protoxide into immediate contact with the nitric acid, largely diluted; but this process requires that the protoxide be previously prepared, which complicates the operation. In employing this mode, the ordinary salt of tin (the protochlorate of tin) is dissolved in water; then filter it, and add ammonia in a slight excess to it: thus is formed an abundant white precipitate, which is the hydrate of the protoxide; then submit the mixture to ebullition. The precipitate changes its colour; it becomes at first gray, and then black; it acquires more cohesion, and is deposited more readily: it is now deprived of the water of combination which it contained. Suffer it to cool, wash it by decantation, and leave it to dry.

No more of the protonitrate of tin should be prepared at once than is required for use, as it readily decomposes. At the end of a short time, it forms a gelatinous deposit, which is nothing else than the sub-protonitrate.

Potato Sugar obtained Crystallized.—M. J. B. Mollerat, of Pouilly-sur-Saône, the proprietor of a manufacture of chemical products, has lately shown to strangers and merchants who have visited his establishment, potato sugar in chrystals, decidedly formed, and perfectly resembling very white sugar ready.—*Bull. Univ.*

Analogy between Chloride of Azote and Chloride of Ammonia.—M. Sérullas announced to the Académie des Sciences, on the 12th April, that he had tried on the chloride of azote the experiments which he had formerly made on the iodide of azote. From this compound he had obtained results analogous to his former experiments: he had ascertained that the chloride of azote was a chloride of ammonia. This analogy led M. Sérullas to examine also fulminating silver, which Berthollet, who was the discoverer of it, considered as an ammonide of silver, while other chemists considered it

as an [illegible]. M. Serullas has satisfied himself that this compound was actually formed by an oxide of silver and ammonia.

Chemical Analysis of the Balm of Mecca.—M. Trommisdorff, a German chemist, has enjoyed the opportunity of analyzing a quantity of balm of Mecca, perfectly pure, and of the first quality. The results of his experiments he announces to be as follows:—1. The principal ingredients of balm of Mecca are volatile oil and resins. 2. This balm does not contain benzoic acid, nor does it furnish any. According to the definition of the French chemists, therefore, the balm of Mecca should be erased from the list of balms; but that definition has not been adopted in Germany. 3. Five hundred parts of balm of Mecca contain,

Volatile oil	150 grains.
Neutral resin, not soluble in alcohol	20
——— —— soluble in alcohol	320
Extractive matter, colouring and bitter	2
Water	8
	500

4. The volatile oil probably gives to the balm the extremely pleasant odour, and the aromatic and sharp taste which distinguish it. 5. The resin soluble in alcohol is to be considered as neutral, since it shows no affinity with the alcaline bases, and does not act as a base towards the acids. 6. The insoluble resin is neutral for similar reasons. It had already been found in the balm by M. Vauquelin. 7. The extractive colouring matter is probably, considering its small quantity, an accidental ingredient. 8. The balm of Mecca cannot be the produce of a cucurbitaceous plant (of the water melon kind) as the traveller Burckhardt represents it. The plant which furnishes it must be of the terebinthaceous (turpentine) family.

New Hall of the Academy of Sciences at St. Petersburgh.—A new large and magnificent building has been erected at St. Petersburgh for the Academy of Sciences. The edifice is just finished. The great Gottorp globe has been brought from the former building, which served for the purposes of the Academy, and placed in a rotunda in the new building.

§ 2.—Natural History.

Cuvier's Subdivision of Vertebrated Animals.—The Baron Cuvier, in his system of zoology, divides vertebrated animals, considered as one of the four grand divisions of the animal kingdom, into subdivisions or classes, characterised by the kind or strength of their motions, as dependent on the quantity of their respiration; since it is from the respiration that the muscular fibres derive their energy and their irritability. The quantity of respiration depends on two conditions: the first is the relative proportion of blood which is presented to the respiratory organs in a given time; the second, the relative proportion of oxygen which enters into the composition of the fluid in which the animal lives, whether water or air. The quantity of blood which is acted on by respiration, depends on the structure and disposition of the organs of respiration and circulation. The organs of circulation may be double, so that all the blood which is returned by the veins is obliged to circulate through the respiratory organs, before it is carried again to different parts by the arteries; or these organs may be simple, so that only a portion of the blood returned from the body to the heart is obliged to pass through the respiratory organs, and the rest circulates again through the body, without having been subjected to the effects of respiration. The latter is the case with reptiles; their quantity of respiration, and all the qualities that depend on it, vary according to the proportion of blood which

enters the lungs at each pulsation. From these characters Cuvier forms the four subdivisions or classes of vertebrated animals, which are,—Class 1. *Mammiferous Animals*, which bring forth their young alive and suckle them, being provided with teats (Lat. *mammæ*), whence the name is derived. Class 2. *Birds*. Class 3. *Reptiles*. Class 4. *Fish*.

In mammiferous quadrupeds the quantity of respiration is less than that of birds; but it is greater than that of reptiles, on account of the structure of the respiratory organs; and exceeds that of fishes, on account of the different elements in which they live. Hence result the four kinds of movements, which the four classes of vertebrated animals are particularly destined to exert. Mammiferous animals, in which the quantity of respiration is moderate, are generally formed to develope their strength in walking or running. Birds, which have a larger quantity of respiration, have the activity and strength of muscles necessary for flying. Reptiles, in which respiration is more feeble, are condemned to crawl; and many of them pass a part of their lives in a kind of torpor. Fishes require to be supported in an element nearly as heavy as themselves, in order to exert their proper motions in swimming.—*Mag. of Nat. History.*

New Species of Tapir.—In the sitting of the Académie des Sciences, of the 12th of April, M. G. Cuvier read a report on the memoir of M. Roulin on the natural history of the tapir, and especially on that of a new species discovered by the author of the memoir in the elevated regions of the Cordilleras of the Andes. The reporter concluded that the animal described by M. Roulin is a new species of tapir, and compliments the author of the memoir on the enterprising and enlightened spirit which has directed his labours, and on his success in adding to the catalogue of known animals an important quadruped belonging to a genus of which hitherto one species only has been recognised. In his report M. Cuvier addressed himself particularly to mark the anatomical characters which distinguished the new race of tapir, as well from the ancient one of America as from that of Sumatra. He insists that the new species resembles much more the antediluvian palæotherium than either of the two heretofore known; but he protests against admitting the suspicion of a metamorphose of the palæotherium of the ancient world into the tapir species of the existing races. The difference in their osteology he says is very great; the cheek-teeth are not at all alike, and the tapirs have to the fore-legs a toe more than the palæotheriums. M. Roulin suggests that the mé of the Chinese is no other than the young tapir. He also refers the griffin of the ancients to the tapir, asserting that this animal, viewed at a distance, and sitting in a posture of repose, calls to mind the images given of griffins, with the exception of wings, and these he treats as an addition of subsequent times, and not mentioned by Herodotus in his description of this mythological animal. These ideas, says the reporter, are ingenious, and may appear of value to the learned who give their attention to antiquities.

Emigration of Snipes.—A Norfolk sportsman gives the following result of his observations on the arrival of snipes in the district of the country in which he resides. They are regulated, he observes, in their emigration by the state of the temperature and the quarter whence the wind blows. Their arrival, towards the beginning of February, is delayed by the prevalence of east and north-easterly winds; but should warm genial airs accompanied with south-west winds, prevail, they will arrive in greater numbers, and at an earlier period. Their return is much regulated by the state of the atmospheric temperature, inasmuch as that return is consistent with the flowering of certain wild plants, which is retarded or forwarded precisely as the spring happens to be cold or warm. For instance, in the latter part of the month of February the little Draba verna is seen opening its flowers on old

wall[illegible] banks with a southern exposure; at that time a few snipes (the advanced guard of the main body) are invariably to be found in the marshes. When (about the second week in March) the Ranunculus Ficaria is noticed, and the Viola odorata is seen in blossom, diversion in the pursuit of snipe-shooting is sure to be found. The return of snipes has been noticed, in some years (as in 1825), as early as the last week in February; and, in some years (as in 1826), the arrival of the greater body has been as late as the last week in March. The usual time, however, for their principal remigration may be stated to take place from about the 14th of March to the end of the month.

Value of European Singing Birds in India.—The following prices at which European singing birds were valued in the East Indies in 1782 has been communicated to the [illegible] Magazine of Natural History,' and extracted from an account-book of the late [illegible] Graham, Esq. of Rickenby, near Carlisle, who resided in India above twenty years: 11 goldfinches, 66 Racary rupees (rather more than 2*s.* per rupee); 1 blackbird, 40 *rup.*; 1 thrush, 30 *rup.*; 1 nightingale, 26 *rup.*; 1 lark, 25 *rup.*; 3 goolsrahs, 24 *rup.*

Spermaceti Whale taken off Whitstable.—The same periodical has collected various accounts of the cachalot or spermaceti whale taken off Whitstable in February last. The following is a summary of the particulars:—A whale was left by the tide in only 8 ft. of water on the Essex coast, in which situation he was seen by the master of a French ship, who immediately put off to attack him. He was then so much exhausted by beating about in shallow water, as quietly to suffer a small cable to be attached to his tail, and thus promised to become an easily-conquered prize. He was forthwith fastened to the vessel and taken in tow. In about half an hour, however, the deep water having by that time so much renovated his power, it was soon apparent that he was the stronger swimmer of the two, as he actually towed the ship stern foremost a considerable distance. This trial of strength broke the cable, and he regained his liberty. The animal was afterwards stranded on the opposite coast, off which he was attacked by fishermen of Whitstable, who went in quest of him; and, after a short but perilous hunt, drove him within half-a-mile of the shore, where the wearied animal, having in vain attempted to escape, rolled himself on his side, and expired. Two harpoons were found sticking in his back, which seemed to be very much bruised, owing, probably, to the shallowness of the water in which he had been so long confined. The stench arising from the dead body was almost intolerable, and was smelt at three miles' distance from the sea. The noise of his floundering upon the shingles was compared to that of all his bones being broken, which, added to his bellowing, was as terrible to the ear as the sight of so vast an animal, exerting his utmost power in a struggle for existence, was to the eye. His death was promptly effected by a seaman in the preventive service, who had served on board a whaler, thrusting a spear in a proper direction, and putting an instantaneous stop to his sufferings.

This animal was a male, nearly full grown, being nearly 63 ft. in length and 36 ft. in circumference. He yielded 9 tons of oil and a considerable quantity of spermaceti; much of both was, however, unfortunately lost, by oozing out of the wounds, in the interval between its death and *flencing*, as the cutting-up is termed by the whale fishermen. The value of the oil is stated to be 80*l.* per ton, making the animal worth 720*l.*, exclusive of the spermaceti. As soon as the prize was secured, the fortunate men despatched one of their comrades to town, to offer it for sale for 200*l.* It is said that he succeeded in his mission, but, by some accident, not returning at the time expected, it was sold to Messrs. Enderby and Sturge, of Thames-street, for 50 guineas, the first purchaser relinquishing his claim; and coppers being

erected on the beach by Mr. Sturge's men, the operation of cutting up and boiling the blubber commenced five days after its death: but, even in that short interval, the internal parts had become so insufferably putrid, that the intestines, which were three cart-loads, were carried away and spread on the fields as manure. These exuviæ were afterwards examined, in the hope of discovering ambergris, but without success.

The purchasers liberally gave the men 40 guineas in addition to the original bargain, and they also realised 40*l.* by exhibiting the whale on the beach; so that the crews of the boats were eventually well recompensed for their trouble and risk. The skeleton was presented by those gentlemen to the museum of the Zoological Society; but government having put in a claim to the royal fish, the whole proceeds of it are under arrest, and the bones now lie whitening on the shore.

Effects of Fresh Water on Marine Animals.—The 'Magazine of Natural History,' of May, opens with a curious and interesting paper on the remarkable effects produced by fresh water on certain marine animals and plants, which has been lately read to the Belfast Society of Natural History by Dr. Drummond. Among other objects, the experiments on which were detailed by Dr. Drummond, was the white-worm, or lug, or lugan, the Nereis cœrulea of Linnæus. A number of specimens of this animal lay on a plate and were motionless. The doctor dipped his hand in fresh water, and with a jerk sprinkled some drops of it over the plate, and the specimens on it. In about two seconds the worms were all in violent agitation, rolling round on the longitudinal axis of their bodies, and writhing together in apparent agonies. After a few minutes the agitation ceased, and they again lay motionless. He then tried the effect of touching an individual with a small drop of fresh water. The part to which the latter was applied, almost immediately contracted in the manner that a leech contracts at the place where a little salt is applied to it, and then the whole animal became agitated, and dashed violently about the plate, frequently, at the same time, protruding and contracting its proboscis. Other trials were made, and followed by similar effects; it mattered not what part of the animal was touched: the smallest drop of water from the point of a probe produced the partial contraction at the part, and then the general convulsive writhing and agitation of the whole body. Even fragments of the worm were similarly affected. It appeared, however, that the mouth extremity was more sensible to the touch of the poison than any other part, as the convulsive efforts which followed seemed more violent, and longer continued than when the water was applied elsewhere. As the most striking way of exemplifying the virulent effects of fresh water, Dr. Drummond recommends, when the worm is at rest, to apply consecutively from the point of a probe ten or a dozen small drops of *sea water* to any part of it; this causes no alteration; the animal continues motionless. If we then change the drop to be applied from salt to fresh, the very first application of the latter immediately produces the phenomena above described.

Respiration of Crustacea.—According to a memoir by MM. Audouin and Milne Edwards, read to the Academy of Sciences, and reported on by MM. Cuvier and Duméril, and the experiments therein detailed, it appears that in all crustacea the gills (branchiæ) are adapted to perform the functions of respiratory organs in atmospheric air as well as in water; that the death, more or less rapid, of all the aquatic races when exposed to the air, depends on several causes, of which one of the most direct is the evaporation which takes place on the gills, and which causes them to dry up; that consequently, one of the requisites for the support of life in animals having gills, and which exists in air, is to have those organs secured from drying up; and lastly, that these indispensable arrangements

are equally provident for in the divers kinds of land crabs, all of which possess various organs destined to absorb and keep in reserve a quantity of water sufficient to keep up a suitable degree of humidity around the gills.

Manifold Properties of the Elder Tree.—The elder tree, says Miss Kent, in an article in the 'Magazine of Natural History,' does as much good by its noxious as by its agreeable qualities. If corn or other vegetables be smartly whipped with the branches, they will communicate a sufficient portion of this scent to keep off the insects by which so many plants are frequently blighted. An infusion of the leaves, poured over plants, will preserve them from caterpillars also. The wine made from the berries is well known; but, perhaps, it may not be so generally known that the buds make an excellent pickle. A water distilled from the flowers rivals buttermilk itself as a rural cosmetic. In some remote country places it supplies the place both of the surgeon and the druggist; it furnishes ointments, infusions, and decoctions, for all ailments, cuts, or bruises. Every part of it serves some useful purpose; the wood, pith, bark, leaves, buds, flowers, and fruit. Its narcotic scent makes it unwholesome to sleep under its shade.

Growth of Dangerous Plants with Watercresses.—A dangerous plant of the order Umbelliferæ is the water parsnep, (Sium nodiflorum,) which grows in close companionship with the watercress; and, when not in flower, so nearly resembles that plant, as to have been frequently mistaken for it. The watercress is of a darker green, and sometimes dashed with brown; the leaflets are of a rounder form, more especially the odd one at the end, which is larger than the rest, and their edges are irregularly waved. The water parsnep is of a uniform light green, without any tinge of brown; the leaflets are longer and narrower than those of the watercress, tapering at each end, and serrated at their edges. The best way to become acquainted with the difference, and to obtain a confident knowledge of them, is to examine them in the month of July, when the flowers of both are present to decide between them.—*Magazine of Natural History.*

Preservation of Specimens of Plants.—The directors of the French Museum of Natural History, in their report on the specimens of plants collected in 1827, in Senegal, after observing that the plants collected by M. Leprieur, apothecary to the Navy, had arrived in a very bad state of preservation, recommend travellers, if they would not lose the valuable objects they had gathered, to steep all plants in an alcoholic solution of corrosive sublimate.

Recommendation to convert the Regent's Park into a Botanical Garden.—The 'Magazine of Natural History' very justly observes, that it is to be regretted that those who first designed the plantations of the Regent's Park seem to have had little or no taste for, or knowledge of, hardy trees and shrubs; for this park might have been the first arboretum in the world. Instead of the (about) 50 sorts of trees and shrubs which it now exhibits, there might have been all the 3000 sorts. The same paper suggests, that it is not yet too late to supply this defect, and the expense to government would be a mere bagatelle. The Zoological Society, in the mean time, might receive contributions of herbaceous plants, and be at the expense of planting and naming them.

§ 8.—Medical Science.

Caution necessary in Inflation, as a Remedy for Drowning and Suffocation.—At the meeting of the Académie des Sciences, on the 20th of April, a report was read on the memoirs of M. Leroy d'Etiolles, relative to the dangers

of inflation, considered as succour to persons drowned or suffocated. The reporters had repeated the experiments related by M. Leroy d'Etoiles, and had satisfied themselves, that in many animals, such as sheep, rabbits, goats, foxes, an inflation, in any degree strong, of air, into the lungs was sufficient to cause instantaneous death. Other animals, such as dogs, resisted the sudden inflation, and though they suffered from the effects of it for some days, they finally recovered. The question then follows, in which of these two cases is man? The experiment of course could not be tried on living subjects. But it was reported, that by accident, a man having, in joke, blown into the mouth of his wife, holding her nose at the same time, a painful sensation of suffocation was the immediate consequence; this lasted several days, and caused great alarm to the parties. In experiments on dead bodies of adults and old men, the inflation, by means of a tube, introduced by incision, into the carotid artery, had caused the rupture of the coat of the lungs, and a rush of air between the costal and pulmonary pleura. It was to be concluded then, that the same experiment, had the subjects been living, would have occasioned instantaneous death. Similar experiments had been tried on newly born infants and embryos, but in these cases the strongest inflation produced no diffusion of air in the cavity of the pleura. An infiltration, however, sometimes observed under the pulmonary pleura in the latter experiments, showed that the inflation of the lungs of infants was not exempt from danger. On the whole, however, the reporters, taking into consideration the number of instances in which inflation had been adopted with happy results in cases of drowning and suffocation, conclude, that although there is danger in the remedy, it is not to be condemned; but, that it must be applied with every care and caution, and that, notwithstanding the advantage of purity of air, supposed to attend the making the experiments by means of a bellows, inflation from the mouth of a living person is better.

The reporters, in the course of their address, observe, as a singular coincidence well worthy of attention, that since the system of inflation has been introduced at Paris, the attempts to restore life have been less efficacious than formerly. From a table furnished by the Préfet of police, it appears that in the six years, from 1820 to 1826, 1835 persons had been taken out of the water at Paris; of this number, 368 only had been in a situation to receive any aid, and 283 had been restored to life. From 1772 to 1778 the échevin (sheriff) of Paris, Pia, the founder and director of the establishments for succouring the drowned, restored to life 813 drowned or suffocated persons, out of a number of 934, to whom succour was given; that is to say, he saved eight-ninths; while at this day, according to the official documents, not more than two-thirds of the individuals who receive help are restored.

M. Leroy d'Etoiles has invented and modified instruments to be used in the process of inflating drowned persons; he suggests also the simultaneous application of galvanism to the diaphragm, in order to encourage its movement of contraction. Of this, experiments had been made before the commissioners, and attended with happy results. He also recommends a practice much used in England formerly, the simple one of gentle pressure on the abdomen and thorax, in order to bring into play the elasticity of the ribs, their cartilages, and the sides of the abdomen.

Surgical Operations performed during a State of Insensibility of the Patient.—The French journal 'Le Globe' has several times taken occasion to maintain the insensibility of persons in convulsions, or different kind of trances, and to urge the advantage that might be taken of that insensibility to perform operations in surgical cases. Some time since it gave the details of a wonderful instance, in which a young girl, who, in a state of insensibility, extirpated, by cutting it several times with a scissors, a cancerous tumour in the mouth, which had been dreadfully painful, and which the most skilful sur-

geon considered incurable, absolutely beyond the resources of the art. They had refused to operate on the part not removed by the scissors, and this also the young patient, still in a state of insensibility, tore out with her nails. A fact of a similar kind, but somewhat less marvellous, is recounted by the 'Globe,' as having been announced to the Academy of Medicine of Paris, by M. Jules Cloquet, one of the most distinguished surgeons of that city. This was an operation for a cancer, performed on a lady sixty-four years of age, when in a state of trance, and during which she gave no signs whatever of sensibility. The operation lasted from ten to twelve minutes. Yet when the wound came to be washed with a sponge steeped in water, the patient must have experienced sensations similar to such as are produced by tickling, and without recovering from her state of trance, cried out, 'Have done—don't tickle me.' The patient did not come to herself for forty-eight hours afterwards. The removal of the first dressing was effected in that interval, and this second operation was not more painful than the first. Her senses at length recovered, she perceived, to her astonishment, that the operation to which she had not been able to bring herself to consent had been successfully performed. The relation of this fact was received, said the 'Globe,' by the audience with the highest degree of wonder, and immediately a celebrated surgeon, well known for his talents and honourable character, exclaimed that it was all a trick, and the woman must have pretended not to feel.

The alleged absurdity of this assertion is exposed in an article in a subsequent number of the same journal. The patient, it seems, had died in about fifteen days after the operation, not, however, before she had recovered sufficiently to take a long walk, nor before the wound had become almost healed. The surgeon had from the beginning expressed and recorded his opinion that the case was such that the patient could not survive long. The state of insensibility was produced by magnetism, and was renewed by the same means, and with equal effect, on every occasion of dressing the wound.

Phlebotomy among the Tribes of Siberia and Asiatic Russia.—The principal surgical operation among the nations of Russia is bleeding. This is practised with a blunt lancet, a scalpel, a bistoury, a two-edged needle, or a small peculiar kind of knife with three points. The Kalmucks make use of a kind of fleam, the cutting blade of which opens the vein, by means of an iron hammer employed to strike the blow. Among the Asiatic races, a kind of small cross-bow is used, the arrow being a kind of lancet, which is driven into the vein on pulling the string. In Kamtschatka it is the usage to open a vein near the ankles, with a small knife, a punch, a needle, or an awl. Dr. Henri de Martius, physician at Nossen, in Saxony, who has had opportunities of observing the usages of these people, has published a little work on the state of surgery among the nomade races of Siberia and Russia.

Breslaw Collection of Anatomical Preparations.—The anatomical collection of Breslaw ranks among the richest in Germany; it contains 3052 preparations in physiological anatomy, 2474 in pathological anatomy, and 247 in comparative anatomy; in all, 8000 preparations, of which 6395 have been collected by the present professor Otto, who has published a catalogue of them.

Effects of cutting the Auricular Canals in Beasts.—In our last number we noticed the memoir submitted to the Academy of Sciences by M. Flourens, and reported on by MM. Cuvier and Duméril, on the effect of the section of the semicircular canals of the ears in birds. A second memoir of M. Flourens, on which the report of MM. Cuvier and Duméril was equally

favourable, treats on the effect of cutting the same canals in mammiferous animals. It appears, that besides the motion of the head in a vertical direction, occasioned in birds by such section, in animals another motion is sometimes added, as the consequence of the same operation, the whole body turns on its back, but in some cases the efforts of the animal replaces it in its proper position.

Dentition in an Old Man, and Death in consequence.—An old man of the age of 75 years, consulting Dr. Jahn, at Meiningen, told him that he was about to cut a new tooth, which was already bursting through the gum, and that this late dentition was hereditary in his family. On examining the mouth, the Doctor perceived an enlargement of the gum at the place of the last molar tooth, on the left side of the lower jaw, and further back a protuberance formed by the new tooth. A short time after, the old man was attacked with a violent affection of the brain, under which he died. On examination after death, an inundation of waterish liquid was found on the brain; the new tooth was extracted from the jaw: it was perfectly formed, but small, and had very short roots.

Cure for Ringworm and Tetters.—Dr. Reinhardt, of Mullhausen, recommends the use of a solution of borax in water, as a cure for scurfy tetters. He affirms that he has adopted this remedy with great success in the course of his practice. He first used it in his own case, having a complaint of the kind on his hands. The application produced at first a burning sensation with redness; and it was discontinued for some days and resumed, and the disorder gradually disappeared. In three similar cases the same cure was adopted with equal success: in one instance, on an old man 60 years of age, who had been suffering the inconvenience for several years.—*Journal der prakt. Heilkunde.*

Second Attack of Scarlet Fever in the same Subject.—A German surgeon, Reinhard Stemmung, in a work on the Nature of Scarlet Fever and its Treatment, mentions, as a case of very rare occurrence, the fact of a girl of nine years old being twice attacked with the scarlet fever within a short period, *viz.* on the 29th of December, 1824, and on the 9th of February, 1825.

Eruption of the Measles on one Side only of the Body.—A child, from the time of its birth until it was a year old, had perspired on only one side of his body: this singular anomaly had disappeared under the application of continual warm baths. In an epidemy of measles, the child was attacked with that disorder, but the eruption only showed itself on that side of the body, which, from the beginning, had enjoyed the greatest share of vital activity.—*Rust's Magazine.*

Vaccination in Denmark.—According to the Report of the Danish College of Health, the number of persons vaccinated during the last year within the kingdom, exclusive of Greenland, the Faro Isles, or the colonies out of Europe, amounted to 28,419.

New mode of Vaccinating.—In the hope of rendering vaccination a more certain preservative against the attacks of small pox, M. John vaccines his patients on the thighs as well as the arms, in such a manner as to produce from 24 to 36 pustules. The fever which succeeds to this operation is represented as very strong, but as never having been attended with grave or dangerous symptoms.—*Archiv für medicin. Erfahrung.*

Method of distinguishing Rhubarb of Muscovy from Rhubarb of China.—The test proposed for this purpose is hydriodique acid; the rhu-

barb of Muscovy brought into contact with this acid, assumes a fine green tint; that of China, submitted to the same test, becomes brownish; the English, or pseudo-Russian rhubarb, takes a deep red; the French passes nearly to blue. The author who suggests this test, hesitates to pronounce positively as to its efficacy to decide in all cases between the rhubarb of Muscovy and that of China; but he thinks that, by the aid of the iodine, it may be determined if a rhubarb will keep a long time or not. This depends on the greater or less quantity of amylaceous fecula which it contains: the rhubarb will keep a less time when the quantity of fecula is considerable.—*Magasin für Pharmacie.*

§ 4. Agriculture and Rural Economy.

Renovation of Grass Lands.—The following is a plan adopted in Roxburghshire for the renovation of grass land, and is recommended instead of the usual practice of letting the land for a rotation of crops, a practice, the frequent results of which are found to be that the field is laid down foul, and in bad condition; the land is slightly ploughed and *ill worked*; the green crop starved of manure, and not *well cleaned*; and the ground is impoverished, not improved; moreover, there is much waste of vegetable matter, which is not effectually rotted. The method adopted by the Roxburgh experimenter is as follows:—A field of seventeen acres was selected which had been fourteen years in grass. The soil was thin, the subsoil cold and retentive. The grass had gradually got weaker, and much infected with moss or fog. The rent was about 18*s.* the English acre. Towards the end of last May, the turf was ploughed two inches and a half deep, and gathered into long heaps, three and a half or four feet high by six feet broad, on the top of each ridge. The field was then ploughed as deep as a plough with a pair of horses could go (from nine to twelve inches), and left to lie all summer. Soon after Martinmas, the heaps were turned, and cast upon new ground along side of each, for the threefold purpose of facilitating the process of rotting the turf, of putting lime into the heaps, and of permitting the ground to be ploughed on which they were first laid, which was done immediately. From eight to ten double cart loads of lime per acre were given, according to the quality of the soil. The turf heaps were then spread. They were found entirely decomposed, excepting only a remnant of the green fog, and are said to promise to afford a much richer covering of vegetable mould than before. The quantity will not be less than from 340 to 360 cubic yards per acre, and will give from 2¼ to 2½ inches of soil over the whole field. The field has been cross ploughed, and is now furrowed and sown with oats and grass seeds. The result of this experiment is promised in a future number of the 'Quarterly Journal of Agriculture,' from which this account has been taken.

Preservation of Turnips in Spring.—A Berwickshire farmer recommends the following method, practised by him with success for six years, of preserving turnips from the alternations of frost and thaw in the spring. When the turnips, in the month of November, appear to have ceased growing, or when the first check to their growth has taken place from a gentle frost, and, if possible, when the land is dry, the plan is to take a common plough, and cover the turnips completely up, leaving only the tops of the leaves above ground. In this state they will keep in any kind of weather, and for a great length of time; and when required for use, one man will pick up in a day a quantity sufficient to serve eight score of sheep; or, if the land is dry, the turnips can be ploughed up in the same manner as potatoes are. In the case of yellow and Swedish turnips, this plan has the advantage of keeping

them from the wood-pigeons and crows, so destructive to the roots, particularly during a frost, when these animals have no other food.—*Quarterly Journal of Agriculture.*

Cultivation of Beet-root for the Manufacture of Sugar.—The manufacture of sugar from beet-root, which was introduced into France by Napoleon in 1811 and 1812, has never been abandoned, notwithstanding the many disadvantages under which it has laboured, and especially that of competition with West India sugar on the return to the market of that commodity, after the termination of the war. Several patriotic men of science, and noblemen, have continued to carry it on and promote it under the most unfavourable circumstances, and without regard to profit,—from the persuasion that it would ultimately prove beneficial to their country. Among these may be mentioned Count Chaptal, the Duke of Ragusa, General Preval, Count Dauvemont, Count Moncalbrie, M. de Serilly, M. de Dombasle, M. Crespel Delisse. M. Dubrunfaut, in his examination before a committee appointed to report on the manufactures and commerce of France, estimates the number of sugar manufactories in France at nearly one hundred, and the quantity of sugar made yearly at five millions of kilogrammes, or 4921 tons 11 cwt. 1 qr. While the price of refined sugar at Paris is about 2 francs 40 centimes per kilogramme, or 11½*d.* sterling per English avoirdupois pound weight, the manufacture of beet-root sugar is profitable, it is rapidly increasing, occupies above five-and-twenty large sugar manufactories in Picardy alone, besides others in the Netherlands, and in various parts of the Continent; and it is estimated, by well-informed French people, that one-half of all the sugar consumed at present in the city of Paris, and one-eleventh of the total quantity consumed in France, is home-made beet-root sugar. In the departments of the Somme and of the Pas de Calais alone, there are above twenty establishments on a large scale making sugar. The cultivation of beet-root by the small proprietors of land for sale to the sugar-makers, is a regular and common branch of husbandry; and, in those departments, it is asserted, sugar is not only made on the large scale by the manufacturers, but by the housewife of the farm-house, as a matter of domestic economy, requiring not more skill or trouble than cheese-making or brewing. The beet-root sugar-makers on the large scale refine their sugars, therefore, and produce sugar which, for whiteness and beauty, is unequalled by the refined sugar we produce from West India raw or Muscavado sugar. Bulk for bulk, however, the refined West India sugar is sweeter than the refined beet-root sugar; but, weight for weight, the two are equally sweet. From five to seven per cent. of raw or Muscavado sugar appears to be the usual produce from a given weight of beet-roots. From a given weight of this raw sugar, forty per cent. of the finest white refined sugar, with fifteen per cent. of inferior refined sugar, appear to be the quantities produced; making about two pounds and four-fifths of a pound weight of the finest white refined sugar from each hundred pounds weight of raw beet-roots. The pulp from which the juice is extracted, and the other residue of the manufacture, are used for feeding cattle, and form a very important item in the returns of profit. According to M. Chaptal, the value of the molasses, pulp, &c. is sufficient to cover one-fourth of the expense of the manufacture. It is not the least promising feature of the manufacture, in the eyes of those who promise themselves great and extraordinary results from it ultimately, that it is thus linked with the ordinary business of husbandry,—that it offers no excessive rate of profit,—that it operates upon a known root cultivated for feeding cattle,—and that the farmer, whether he raises beet-root for feeding cattle, or for sale to the sugar-maker, is cultivating a green crop, which, in his ordinary rotation of crops, he would at any rate raise on a part of his farm. The discovery of sugar in the roots and plants of the beet tribe, was discovered

by the eminent German chemist Marcgrave, and by him announced in a memoir read before the Academy of Sciences of Berlin in 1747. From the want, probably, of experience and practical knowledge, the operations he proposed for extracting and crystallizing the saccharine matter of beet-root, were too expensive and dilatory to be successful. M. Achard of Berlin resumed the experiments of Marcgrave, and was the first who showed that beet-root sugar might be manufactured on a large scale with advantage.

An interesting article in the last number (May) of the 'Quarterly Journal of Agriculture' examines this subject in detail, and gives statements of the expense of the manufacture as practised in France. These accounts the writer concludes with the following observations:—'From all these estimates and accounts it is impossible not to come to the conclusion, that this manufacture must be looked upon as a new and most important branch of agricultural business in Europe. It is yet but in its infancy, but it is an infancy which gives promise of very extraordinary results. Sixteen or eighteen years ago, beet-root sugar was a lump handed about in the laboratory of M. Chaptal, as a proof or a specimen of the possibility of extracting saccharine matter from beet-root by chemical process; and now M. De Crunfaut, in his evidence before the committee for inquiring into the state of the manufactures and commerce of France, estimates the weight of beet-root sugar made in France in 1828 at 5,000,000 of kilogrammes, or about 4,920 tons weight. We doubt if the manufacture of sugar from sugar-cane increased more rapidly in the West Indies at its first introduction.'

Swiss Method of procuring Liquid Manure.—The farmers of German Switzerland give the name of *Gülle*, in French *lizier*, to the liquid manure obtained from their stalls and stables, and collected into underground pits or reservoirs, in which it is allowed to foment in a mucous or slimy state. The manner of collecting it adopted by the agriculturists of Zurich is as follows:—The floor on which the cattle are stalled is formed of boards, with an inclination of four inches from the head to the hinder part of the animal, and so managed that the excrement may fall into a trench running along the stable or shed: the depth of this trench is 15 inches, its width 10 inches. It should be so formed as to be capable of receiving at pleasure water to be supplied by a reservoir near it; it communicates with five pits by holes, which are opened for the passage of the slime, or closed as occasion requires. The pits or reservoirs of manure are covered over with a floor of boarding, placed a little below that on which the animals stand. This covering is important as facilitating the fermentation. The pits or reservoirs are made in masonry, well cemented, and should be bottomed in clay, well beaten, in order to avoid infiltration. They should be five, in order that the liquid may not be disturbed during the fermentation, which lasts about four weeks. Their dimensions should be calculated according to the number of animals the stable holds, so that each may be filled in a week. The reservoirs are emptied by means of portable pumps. In the evening the keeper of the stables lets a proper quantity of water into the gutter; and on returning to the stable in the morning, he carefully mixes with the water the excrement that had fallen into it, breaking up the more compact parts, so as to form of the whole an equal and flowing liquid. On the perfect manner in which this process is done the quality of the manure mainly depends. The liquid ought neither to be thick, for then the fermentation would be difficult, nor too thin, for in that case it would not contain sufficient nutritive matter. When the mixture is made, it is allowed to run off into the pit beneath, and the stable-keeper again lets water into the trench. During the day, whenever he comes into the stable, he sweeps whatever excrement may be found under the cattle into the trench, which may be emptied as often as the liquid it contains is found to be of a due thickness. The best proportion

of the mixture is three-fourths of water to one-fourth of excrement, if the cattle be fed on corn; if in a course of fattening, one-fifth of excrement to four-fifths of water will be sufficient.—*Bull. du Comité d'Agri. de la Soc. des Arts de Genève.*

Utility of Moles.—An article from the pen of Mr. Hogg, in the 'Quarterly Journal of Agriculture,' advocates the cause of moles, and insists that they are of the greatest benefit, instead of being prejudicial to the ground. The mould they throw up serves, says Mr. Hogg, as top dressing, and is of great advantage to grass lands. Even should the farmer neglect to spread the mole-hills, the crow and the lambs will do it for him. The writer also contends against the notion, which he treats as an unfounded prejudice, that the moles destroy the drains. In support of his defence of the moles, Mr. Hogg refers to the consequences of their destruction on the estates of the Duke of Buccleugh. He maintains, that on all the farms that were most overrun with moles the stock has become reduced at least one-sixth, in some instances one-fifth; and not only that, but two exterminating diseases have been introduced, the pining and the foot-rot, which, in some seasons, have nearly annihilated the stocks on these farms, as well as the substance of the men who possess them. The tenants of the duke, it appears, are so sensible of the detriment done to these soft lands and to their stocks by the extirpation of the moles, that two bodies of them have joined in a head, one in Ettrick Forest, and one in Tiviotdale, in order to petition their young chief to spare the remnant of their old friends the *moudies*, and suffer them to breed again.

Clearing Water Courses.—W. Farish, professor at the University of Cambridge, specified, on the 4th March, his improved method of *clearing water-courses*, which consists in detaining the water which is to pass through any course or drain, in a tank or other appropriate vessel, until it accumulates and rises to a certain elevation, when it is made to disengage itself by opening a sluice or other contrivance, and empty itself instantaneously, and thus wash away any deposit which may have been left in the drain or course. The patentee describes two methods of effecting the instantaneous discharge of the water; but he does not claim either, as any method of discharge most suited to the localities of the drain may be used.

Growth of Wine in Wurtemberg.—The number of vineyards in the kingdom of Wurtemberg is 595. The land destined to the cultivation of the vine is 82,729 acres, of which 61,514 acres are exclusively devoted to that cultivation. The total wine produce in 1826 was 184,380 kilderkins. The value of that produce 3,990,831 florins. According to Balbi the surface of the kingdom of Wurtemberg contains 5,720 square miles.

Forester's French Manual.—A little work on the art of lopping trees, under the title of 'Manuel de l'Elargueur,' and which the 'Bulletin Universel' designates as the most complete book on the subject known, has been lately published in Paris by M. Hotton, a forester and lopper by profession, who details the results of a long experience. He treats methodically and successively of the various cares required by timber trees from the moment of planting them; he discusses the advantages and inconveniences of the preservation or cutting off of the heads of trees at that time; he prescribes the period most favourable for lopping the branches; which at early periods of growth should be retained or removed, or propped or tied up, in order to have well-grown trees; the proportion to be preserved between the trunk and the mass of branches; and what is required to re-establish as well as possible the forms of trees which have been neglected. The work besides contains rules for the management and training of trees destined for the ornament of roads, and of public gardens, squares, &c.

Assurances against Hailstorms.—The injury sustained from violent hailstorms by the agriculturists of France, and more particularly by the cultivators of the vine, are so frequent and so serious as to induce them to have recourse to societies of assurance, similar to the original institutions for assurance against loss by fire in England. An association of this kind has accordingly been formed in Paris for mutual protection against damage done by hailstorms in the 14 departments around the capital.

5.—Horticulture.

Preservation of Grapes for Winter Consumption.—The vine to be grown in hothouses, but without fires, except in the autumn, when the damp season begins. At that period the flues should be heated at about nine or ten o'clock in the morning, admitting air at the same time. After twelve o'clock no more fire should be lighted, and the glasses should be closed air tight. These proceedings should be continued as long as any grapes remain. The simultaneous action, during the day, of the fire and the air prevents the entrance of any humidity. Should the flues be heated during the night, when it is required to keep the hothouse closed, the vapour would produce dampness. In this manner grapes have been kept in good preservation until the beginning of February.—*Magas. d'Hort. de Weimar.*

Mode of making the Heads of Artichokes grow large.—An excellent method of increasing the size of artichokes, is to split the stalk at the top into four parts, and to introduce through the cuts two small stakes of wood placed across. This operation has been long practised in the south of France; several gardeners in the neighbourhood of Brussels have adopted the same custom for some years past, and have obtained much larger artichokes than formerly. Care should be taken not to perform the operation until after the stalk of the artichoke has acquired its full height. *Jour. d'Agri. des Pays Bas.*

Leaves of Scorza Nera as Food for Silk-worms.—The leaves of the Scorza nera have been used with success in the nourriture of silk-worms by Mademoiselle Coge, of Epinal. The silk gathered from worms fed on this leaf is represented to be in no respect inferior to the material furnished by worms fed on mulberry leaves.—*Bull Univ.*

Culture of the Nopal in France.—At the meeting of the Royal Central Society of Agriculture of France, on the 18th February, M. Robert, director of the botanical garden of Toulon, made some communications on the cultivation of the Nopal, to which he has devoted himself. From these it appears that this plant is successfully cultivated at Toulon, and in several districts on the shores of the Mediterranean, but that it is very difficult to multiply and preserve the best race of cochine[illegible] M. Robert has in his possession several individuals which he finds it an [illegible]uous task to preserve; some proprietors of lands in Corsica have a few [illegible] and in the kingdom of Grenada, in Spain, the insect has multiplied [illegible] On this occasion, a fellow of the Society, M. de Hasteyrie, announced that being in Spain, he had ascertained that incision of the leaves of the Nopal will produce gum dragon; the incision to be made in the months of July or August. He suggested that the high price of this kind of gum, and the number of purposes for which it is used in the arts, would give great importance to the cultivation of this plant. Another member, M. Henry, expressed doubts whether the gum so procured was analogous with the gum-dragon produced by the *Astragulus gummifera*, and added that the gum of Bassora, which resembled the latter, was not the same, and was now rejected in commerce. M. Bonafous announced that the cochineal had been introduced into Sardinia, and that the

principal obstacles to its cultivation arose from the ravages committed by the birds.

§ 6. Domestic Economy.

Provision for Widows and Children.—Dr. Mitchell concluded a lecture on savings' banks, lately delivered at the Mechanics' Institution, and reported in the 'Manual of Science and Literature,' with the following hints and reflections relative to the mode of leaving money by will, instancing the case of a man possessed of 2000*l.* in the four per cents., and leaving behind him a widow and two grown-up children. Anxious to secure the interest of the money to his widow, he appoints trustees to pay her the half-yearly dividends during her life, and at her decease to divide the principal between the two children. By this arrangement the widow gets her 80*l.* a year, while the children get nothing but the knowledge that they will be entitled to 1000*l.* each when she dies; and the evident tendency of this disposition of the property is to excite in their minds a wish for the death of their mother, particularly if they should be involved in pecuniary difficulties. Even if no such thought is indulged by the son or the daughter, the wife of the former or the husband of the latter may be less scrupulous, and when contemplating the wants of their own children, may think it no sin to wish the old lady out of the way. All these unnatural feelings would be prevented, if the testator were to direct the trustees to purchase an annuity of 80*l.* for the widow, which would perhaps cost 700*l.*, and to put the two children at once in possession of 650*l.* each. There are few persons, indeed, who would not prefer 650*l.* in ready money, to 1000*l.* payable in ten or fifteen years.

Spine Supporter.—A specimen of an elastic spine supporter, invented by Silvolbred, Jermyn-street, is among the articles exhibiting in the National Repository. It is intended to restore the proper position of the shoulders and open the chest, when a vicious habit of stooping has been contracted. It is formed of a broad plate or back piece of silk or jean, padded and rendered elastic by the fine wire helical springs; this back is kept in its place by a belt and straps round the shoulders. If, therefore, the wearer stoops or inclines forward, the springs dilate, and allow of that motion, but the pressure thus thrown upon the shoulders by the elasticity of the spring-back becomes inconvenient when long continued, and the wearer is gently constrained to keep the shoulders back, and accommodate the body to that attitude, which, while it gives ease, confers a more elegant carriage to it, and, it may perhaps be added, promotes the health.

French Society of Domestic Economy and Mechanical Arts.—A society is proposed to be formed in Paris, under the title of Society of Domestic and Manufacturing Economy, with a view to encourage experiments, to collect facts and proceedings relating to domestic economy and the mechanical arts, and to publish them in a journal. The price of the subscription to be twenty-five francs a year, and every one of the subscribers will receive the journal, to appear every three months, without any further demand. Persons of both sexes are invited to contribute the aid of their talents and purses.—*Bull. Univ.*

Mutton Hams.—The 'Journal des Connaissances Usuelles' gives the following instructions for curing mutton hams: The mutton for the purpose should be very fat. Mix two ounces of raw sugar with an ounce of common salt pounded, and half a table spoonful of saltpetre; rub the ham with this mixture and place it in a pan. Beat it and turn it twice a day for three successive days, at each time throwing away the brine which exudes from the meat. Then wipe it, and rub it again with the mixture as before; on the

morrow beat and turn and wipe it as before, performing these operations until ten days have elapsed, taking care on leaving it after each new salting to have that side uppermost which was undermost before. Let it be then smoked for about ten days.

Curious Fact in the Economy of Bees.—M. de Johas de Gelieu, pastor of the churches of Colombier and Auvernier in the principality of Neufchatel, Switzerland, in a work translated into English, under the title of 'The Bee Preserver; or, Practical Directions for Preserving and Renewing Hives,' affirms a very important and singular fact with regard to the economy of bees. It is, *that when two or three distinct hives are united in autumn, they are found to consume together scarcely more honey during the winter than each of them would have consumed singly if left separate.* In proof of this remarkable result, the author states a variety of experiments to which he had recourse, and all of which led uniformly to the same conclusion. And, indeed, he shows positively, by a reference to upwards of thirty hives, six of which had their population thus doubled, that the latter do not consume more provisions during winter than a single hive does, and that, so far from the bees suffering from this, the doubled hives generally send forth the earliest and best swarms.

The translator, says the 'Quarterly Journal of Agriculture,' who is a lady of great accomplishments, and habits of correct observation, has practised in Scotland most of the plans recommended in the original work, with the same results as the author.

On the Common Fowl and Pheasant.—The following fact we give from the 'Quarterly Journal of Agriculture,' not, however, as an unique case. In the autumn of 1825, a wanderer of the pheasant tribe made his appearance in a small valley of the Grampians, the first of his family who had ventured so far north in that particular district. For some time he was only occasionally observed, and the actual presence of this *rara avis* was disputed by many; wintery wents, however, brought him more frequently into notice; and, in due season, proofs still more unequivocal became rife. When the chicken broods came forth, and began to assume shape and form, no small admiration was excited by certain stately, long-tailed, game-looking birds, standing forth amongst them, and continuing to grow in size and beauty, until all doubts of the stranger's interference with the rights of *chanticleer* effectually vanished. These hybrids partake largely of the pheasant character; and, as they are of a goodly size and hardy constitution, a useful and agreeable variety, for poultry yards, may be secured in a very simple and economical manner.

Mechanical Chimney Sweeping.—The Society for the Suppression of the Practice of Sweeping Chimneys by Climbing Boys, are again applying to parliament for a bill, under the auspices of Mr. Peel. The following summary of the progress made in the use of machines for the purpose of sweeping chimneys, is extracted from the 'Manual of Science and Literature.' In March 1818, Colonel Stephenson, the surveyor-general of his Majesty's works, was directed by Lord Sidmouth to ascertain by experiment how far it was safe and practicable to supersede the practice of climbing boys in sweeping chimneys by the use of machinery. After encountering many difficulties, he succeeded in sweeping one hundred and fifty chimneys at Kensington Palace, Buckingham House, Windsor Castle, the Royal Mint, the Speaker's house, and those of Messrs. Huskisson, Nash, and Lord Liverpool. The machinery used in these experiments, and which perfectly succeeded, was that of Mr. Smart.

Colonel Stephenson also wrote to the three attached architects of the

board of works, Mr. Nash, Mr. Soane, and Mr. Smirke, for their opinions on this subject, who all gave the most decided testimony in favour of the use of machinery.

Since the above, Mr. Hiort the architect, who holds the office of chief examiner in his Majesty's office of works and public buildings, has obtained a patent for an improved chimney flue or tunnel, on a circular plan, which is peculiarly well adapted for machine sweeping.

Among other public bodies, besides those before mentioned, who have done themselves honour by ordering their chimneys to be swept by machinery, are the board of excise, the Irommongers' company, the corporation of London, the London University, the offices under the control of Mr. Peel and the Lord Chamberlain, and all the police establishments.

§ 7.—Mechanical and Useful Arts.

Straw Plait for Hats in Scotland.—The Highland Society offered several premiums in 1825 and 1826 for encouraging the home manufacture of straw plait, in imitation of Leghorn straw; four communications were sent to them on the subject, which they have thought worth publishing, and which are accordingly given in the last number of the 'Quarterly Journal of Agriculture.' The first communication is from Messrs. J. and A. Muir, of Greenock, who, after experiments on various kinds of straw, had confined themselves to the use of rye straw, as plaited in the Orkney Isles. The straw is procured and prepared in the following manner. Not being able to procure seed in Orkney, rye not attaining maturity there, they send annually from Leith from 40 to 45 bolls, which are sown on about 12 English acres of sandy soil, manured with sea-weed. Several acres of heath for bleaching the straw, and water for steeping it, are required in the neighbourhood of the rye fields. The rye is cut when the seed is beginning to form, and it is necessary to attend to the precise time, for ten days too early or too late produce a considerable difference in the look of the straw. When the rye is cut, women are employed to tie it at the lower extremity in handfuls; it is then put into boxes, and covered with boiling water, in which it remains for half an hour. After this it is spread out upon the heath in a fan form, and turned twice daily, until the bleaching, which takes about ten days, is completed. If exposed to much rain while bleaching, the straw is injured in colour, and rendered very liable to take mildew. It is of great importance to have the crop well housed. From information obtained by Messrs. Muir from the London Custom-house, it appears that there are imported to London alone, exclusive of those to Liverpool and Dublin, upwards of 20,000 dozen of hats annually, a quantity which, if made in this country, would give employment to more than 20,000 females, besides those already engaged in making the different kinds of straw hats. A straw plait manufactory, established at Stronton, on the estate, and by the exertions, of Sir James Riddell, has been in operation two years. The establishment for instruction was commenced in May 1827, without twenty girls. The scholars soon became more numerous, and in November 1828 they amounted to sixty, of which fifty were employed in plaiting, and the rest in preparing the straw, in knitting, or making up the plait into bonnets, hat-bodies, &c. The children are admitted when about seven years of age, but they seldom receive payment before ten or twelve months after; the first 10*s.* they make going for an apprentice-fee, and the next 10*s.* for clothing, with which they are furnished by the managers. As they are confined to certain branches, they soon attain to such proficiency in these, that a dexterous plaiter can earn from 5*d.* to 8*d.* a-day, and a good knitter from 8*d.* to 1*s.* They are also allowed to take to their houses materials for working, which, independent of the rest it must necessarily give to cleanliness at home, holds out a

strong incentive to those who have a desire to be industrious. The establishment is represented as having produced a great change in the character and deportment of the natives of the place, (the male population of which is chiefly engaged in working of lead mines,) exciting a taste for cleanliness and neatness, which has been produced, not only upon those employed, but also upon the general appearance of the whole neighbourhood. A third communication was that of the proceedings of a Mrs. Graham, who, about four years ago, procured a book of Cobbett's 'Cottage Economy,' from a farmer in that district, and finding there some instruction about the plaiting of Leghorn bonnets, immediately set about turning it to advantage. By means of Cobbett's figures and descriptions, she succeeded in discovering the proper sorts of grass in the fields, and then in bleaching, cleaning, and plaiting it, as he prescribed. Further trials gave her more insight, and in this branch of the business she was soon perfect. The sewing of the plait together cost her much trouble; but this also, by examining several pieces of real Leghorn, she at last accomplished to her satisfaction. The art of pressing, smoothing, and trimming the plait, was next learned, and, before long, various Leghorns of her manufacture were to be seen, in actual wear, in that quarter; indeed, as many as she could make were willingly bought by the shopkeepers of Dumfries. A fourth communication details the process adopted by Mr. David Strang, teacher of the subscription school of the village of Loanhead, who found the winle-straes, the Holcus lanatus of botanists, or soft meadow-grass, common in all parts of the country, well adapted for the purpose.

New Bark for Tanning.—A tanner of Bern-Castel, on the Moselle, named Rapedius, has discovered a new species of tan, adapted for the preparation of leather: this is no other than the myrtle (Vaccinium myrtilus). It is to be gathered in the spring, rather than at any other season, because it then dries sooner, and is more easily ground. Three pounds and a half of this tan is sufficient to tan the same quantity of leather which it would require six pounds of oak tan to produce. By the new process it is said tanners may gain four months on the time necessary for the manufacture of strong leathers. A commission appointed at Treves for the examination of leather so tanned have reported that they never before saw any article equal to it; that a pair of shoes made from it would last two months longer than those in which common leather was used; that the skin of the neck, which is generally difficult to be worked, when dressed with this tan becomes at the same time as strong and elastic as the other parts. The myrtle should not be torn up by the roots, but cut with a bill, in order to obtain the reproduction of the plant in the following year. When cut, damp does no injury to the tan, which is not the case of the tan of oak, which loses ten per cent. of its value by being wetted.—*Kunst und Gewerbeblatt.*

New Patent for Spinning.—J. Rhodes, jun., of Alverthorp, Wakefield, specified, on the 18th March, his patent for improvements in the machinery for spinning and twisting worsted yarn, and other fibrous substances; consisting of arrangements connected with a heart motion by which the bobbins are made to traverse on their spindles, that the thread may be evenly wound upon them; and by which, when the bobbins are full, the train of levers can be detached from the heart, and the bobbins permitted to descend, clear of the spindles, which are placed with their points downwards, removed and replaced by empty ones with great facility.—*Register of Arts.*

New Patent Cartridge.—E. F. Orson, of Princes-square, Finsbury, specified, on the 18th March, his patent for an improved cartridge for sporting purposes, consisting of a cylinder for containing the charge of shot in the fowling-piece, made of card or strong paper, with longitudinal slits through which the shot is prevented from passing: the piece is discharged by a cover-

ing of thin paper pasted on the exterior, and by a circular wadding of card, placed in each end of the cylinder. The intention of this patent is to prevent the shot from being too much scattered, or thrown in clusters, before they reach their destination.—*Register of Arts.*

Curious Sun-Dial.—Mr. John Abram, of Canterbury, teacher of the mathematics, and author of the 'Kentish Tide Tables,' has constructed a curious sun-dial, which is to be fixed in the front of the Droit-house, Margate, below the transparent clock. The following are the curious properties of this dial. On the upper part is the hour circle, to show the true solar time. Below the hour circle is the torrid zone on a large scale, with the parallels of the sun's declination (hyperbolic curves), corresponding to every half hour of the sun's rising and setting. These half hours are again subdivided into quarters of an hour. The time of the sun's rising and setting for the day is indicated by the extreme point of the shadow of the gnomen traversing the corresponding parallel of declination, which by its diurnal progress over the surface of the dial, also shows, at any given instant, the true bearing of the sun by the compass, indicated by vertical straight lines, marked with different points of the compass. There are, likewise, other parallels of declination, corresponding to the entrance of the sun into each sign of the Zodiac. In short, the dial points out the hour of the day, the sun's place in the Ecliptic, the time of the sun's rising and setting, the length of the natural day and night, and the sun's true azimuth or bearing by the compass.—*Ib.*

Mode of discovering if Stones will resist Frost.—M. Brard, in the 'Annales de Chimie et de Physique,' recommends a process for quickly discovering whether stones will support frost. This process consists of boiling in water, saturated cold with sulphate of soda, samples cut into cubes of the stones which are required to be proved; after half-an-hour's boiling, the cubes are to be taken out of the water, and suspended separately over small vases filled with the solution in which they have been boiled, and which should not contain in suspension any foreign matter. At the expiration of 24 hours the cubes will be covered with a saline efflorescence; they should then be dipped in the liquid several times. The stones liable to be injured by frost experience a very sensible alteration; they leave fragments behind them in the liquid; the cubes lose their angles and sharp edges. In this way a comparison may be made of divers descriptions of stones. The operation is entirely effected in the course of five days.

Exchange at Paris heated by Steam.—The new Exchange at Paris is heated by steam, by means of apparatus furnished by Messrs. Manby and Wilson, directors of the foundries of Charenton. The expense of fitting up the apparatus amounted to 86,094 fr. 52 cent., of which whitesmiths' and plumbers' work amounted to 4973 fr., the masonry to 9500 fr. There were consumed in the construction 70,084,90 kil.* of iron plates, cast iron, wrought iron pipes, and costing, including all incidental expenses. 71,576 fr. 52 cent. The grand hall of the Exchange, including the galleries, contains 18,336 cubic metres† of air. The expense of heating this amounted, during the years 1826-7, to 5711 fr. 66 cent. for 160 days, during which there were consumed 67,000 kilograms of coal of Mons, at 75 fr. the 100 kil., or an expense of 419 kil. of coal, or of 31 fr. 43 c. per day of 8 hours 44 cents heating. During the year 1827-8, 68,000 kil. (at 42 fr. for 120 kil.) were consumed in 149 days' duration of heating; making a sum of 4896 fr. expended on the total heating, or 32 fr. 83 cent. per day of 6 hours $\frac{1}{10}$, during which there was burnt 456 kilograms of coal. The difference of expense in the two winters

* Kilogramme, 2 lbs. av.

† Mètre, 3¼ feet.

was occasioned by the circumstance that during the first the great hall only was heated, while in the second all parts of the apparatus were put in operation. The expense of heating the Exchange was originally estimated at 400 francs a year!

Contrivance for passing Rivers on Foot.—M. Charles de Mayerfy Hunganan, before celebrated for many ingenious inventions, has brought to perfection an apparatus, by means of which the most rapid rivers may be passed on foot. In the month of March 1828, M. Mayerfy, in the presence of a vast concourse of spectators, made an effort to cross the Danube, near the Lagerspital of Pesth. Provided with boots of tin, the legs of which were furnished at the top with a sort of table, he traversed the river in an oblique direction in perfect safety, taking a line of 1,000 yards in length. He amused the spectators with various feats during his singular promenade.—*Allg. Handlung's Zeitung.*

Economy in Gas Burners.—Mr. Lowry, of Greenock, in a communication to the 'Philosophical Magazine,' gives the following accounts of his experiments to ascertain the best means of combining economy in the consumption of gas with the obtaining the greatest brilliancy of flame:—Burners whose circle of holes were 5-8ths of an inch in diameter were tried with from five to fifteen holes in the circle, and the consumption was always the least with the greatest number of holes; though no great difference was observed when the holes were so near each other as to allow the jets to be perfectly united. An enlargement of the holes also produced a saving. When the central aperture was stopped, or partially so, the flame rose considerably, but was conical and dull; but when the central and outer apertures were proportionally reduced, the flame became bright and cylindrical. On shortening the glass chimney, more light was obtained from a given quantity of gas; and on taking off the glass altogether, less gas was consumed in proportion to the light given out.

A perforated plate was laid on the top of the glass chimney, and the quantity of light was increased; and the same effect took place by using a glass whose diameter at top was equal to the openings found most advantageous in the perforated plate.

On doubling the height of the glass chimney, the flame fell to about one-half of its former height.

From the trials made by Mr. Lowry, he drew the conclusion that the greatest effect was produced when the holes were numerous, and rather large than small, the central aperture narrow, and the glass near the flame; the outer aperture being in such proportion to the inner as to keep the flame cylindrical. This construction, however, when carried to the extreme, being attended with the practical disadvantages that, burners being often placed in exposed situations, the least motion of the air brings the flame in contact with the glass, in such a way as to produce smoke; and the glass being intensely heated, is more liable to be broken. He found it answered the purpose fully as well to enlarge the air aperture, making the glass-chimney rather wider and shorter, reducing in this manner the speed of the air through it.

Experience, concludes Mr. Lowry, has shown that burners made on the plan last above described, answer the purpose of requiring less gas than other burners, and giving at the same time as brilliant, and perhaps a more beautiful flame.

Improvement in Microscopes.—The Editor of the 'Technological Repository' speaks with commendation of a microscope constructed by Mr. Bancks, jun. of the Strand, with lenses of his own grinding, of the sixtieth, and even of the eightieth of an inch focus. The performance of this instru-

ment is mentioned as highly satisfactory, when employed in viewing several of the most difficult test objects. Mr. Bancks had likewise availed himself of a *bronzing process*, in giving a dark hue to the brass-work of his magnifiers, instead of blackening them as usual with varnish.

Method of forming Red Glass.—A Dr. Engelhardt has received from the Prussian Society for the Encouragement of Arts a gold medal for his communication of a mode of manufacturing red and flame coloured glass by *flashing* white glass, a process, observes the Editor of the 'Technological Repository,' which has long been used in this country; and particularly by the late Mr. Honeybourne, of Brierly Hill, near Stourbridge, who was celebrated for his skill in making coloured glass. The small red glass lamps, used in public illuminations, are thus formed. The process may not, however, it is added, have been practised in modern times in Prussia; and the communication will, therefore, no doubt, prove highly useful there, as well as in other countries also.

§ 8.—Antiquities.

Research of Antiquities in France.—In order to encourage the research after national antiquities, the French government places at the disposal of the Academy of Sciences three gold medals, to be distributed annually to the authors of the best antiquarian works produced in the course of the year. The minister of 1825 had suspended this donation, but it was renewed last spring by the administration which now governs France, and the three medals of the year were awarded to the Count d'Allonville, préfet of the Meurthe, for a memoir on the Roman camps of the department of the Meurthe; to M. Jouannet, for a memoir on the remains of antiquity at Bordeaux; and to M. Revêt, for a memoir on a number of small statues in terra cotta, found in 1825 in the forest of Evreux, department of the Eure.—*Bull. Univ.*

Roman Theatre at Orange in France.—A plan is in agitation for repairing and preserving the Theatre at Orange, and converting it to modern uses not incompatible with the preservation of the ancient form of the construction. This is known to be one of the most important of the Roman monuments remaining, not only in France but even in Italy. In dimensions it exceeded the theatre of Marcellus at Rome, and, like that monument, has been used for domestic purposes, and converted into dwellings. The northern side is still in a fine state of preservation, and is composed of arcades ornamented with pilasters. Many of the stairs and dormitories, and of the chambers called by the ancients *hospitalia* are still existing. It is proposed, if a slight aid can be procured from the government, by the contributions of the rich of the department, to lay open the orchestra, a labour which it is expected will be remunerated by the antiquities and articles of value to be found there. When the repairs are finished, the edifice will be assigned as a site for holding the fairs and markets of the town.—*Bull. Univ.*

Excavations at Frejus.—The Minister of the Interior has placed a sum of 4000 francs at the disposition of the local authorities of Frejus, to be employed in making excavations in the amphitheatre of Frejus. Several discoveries have already been made, such as seats well preserved, a broken shaft of a column in white marble, a bronze coin, bearing the effigy of Adrian, and several fragments of marble finely worked, which appear to have formed part of a frieze.

Antiquities of Bavai.—The ancient remains of Roman constructions are so

numerous in Ravai, department du Nord, that the inhabitants, who want building material, have only to dig to a certain depth in a garden or field, and they are sure to find as much as they require, ready cut and stacked.' A short time since, a man at work in his garden, discovered a tall skeleton lying in a position from east to west, having between the legs a two-edged sword of which the blade only was three feet and a half in length. The head touched a helmet of bronze, without crest, and having the form of a large skull-piece with vizor. Near the head was a small vase of gray earth, in which was a Roman medal of the age of Antoninus Pius.

Catalogue of Cardinal Mazarin's Furniture.—The Royal Society of Antiquarians of France have published in their 'Transactions,' vol. vii. p. 334, an extract from the inventory or procès verbal of sale of the goods of Cardinal Mazarin, sold under a decree of confiscation of the parliament in 1649. The extract was made from the draft itself of the inventory; the articles chosen are to the number of 129, and comprise a quantity of objects more or less precious; and which prove that the furniture of the cardinal was of a character fully corresponding in variety and magnificence to the high dignities with which he was invested. The inventory shows to what an extreme the luxury of this prince of the Church, and first minister of France, was carried.

French and Scotch Antiquarian Societies.—At a sitting of the Society of Antiquaries of Normandy on Jan. 10., Sir Walter Scott, Thomas Thompson, Esq. Dr. Brunton, Dr. Brewster, and Dr. Drummond Hay, members of the Society of Antiquaries of Scotland, were admitted corresponding members of the Society of Antiquaries of Normandy, by the desire of the Scotch Society, which gave notice of the intention to admit five of the Society of Normandy as corresponding members.

Saxon Antiquarian Society.—A society has been formed in Saxony for the discovery and preservation of ancient national monuments, under the title of Thuringian and Saxon Society for the discovery of Antiquities, and has lately published three numbers of 'Transactions.' In the second, one of the most interesting articles is the description of Sorbenwendenschen tombs near Pulsnitz, in Upper Lusatia. The tombs, which are of blocks of granite, are arranged in radii, departing from a round piece of walling, built in the form of an altar, which seems as a sort of centre, and round which the rays of tombs are placed in a half circle. Every tomb contains a funeral urn, and near it a smaller vase. The disposition of these tombs, observes the Anzeigen of Gottingen, is particularly remarkable, and since much anxiety has been lately manifested to find some characteristic distinction between German and Wendish tombs, antiquaries might here find a point whence to start from in their further inquiries. But this cemetery is a fresh proof that no conclusion as to the origin of a people can ever be justly formed from their mode of sepulture.

Study of National Antiquities in Russia.—The Russian Imperial Academy of Sciences has set on foot an archæological tour of exploration throughout Russia, under the direction of M. Stroeff.

§ 9. Fine Arts.

Freund, Pupil of Thorwaldsen.—The Danish sculptor, Hermann Freund, well known at Rome, and to all visitors of that capital, as the principal assistant of the celebrated Thorwaldsen, is returned to Copenhagen after eleven years' absence, in ten of which he worked uninterruptedly with Thorwaldsen, and is supposed to have done the principal part of the chisel-work to the productions of his master, the skill of the latter, it is said, in handling

the chisel not being equal to his power of modelling. A colossal statue of St. Luke, already executed by him, has raised great expectations in his native country. The first work in which he engages after his return is a bas-relief, on a subject taken from the Northern theogony.

§ 10.—General Literature and Education.

The Petrarch Library.—The King of France, by the advice of the Baron de Bouillerie, the Intendant General of his household, has made the acquisition of the valuable collection of various editions of the works of Petrarch, formed during a number of years by Professor Marsand, of the University of Padua. This collection, of which a descriptive catalogue has been published at Milan, under the title of *Biblioteca Petrarchesca*, in one vol. 4to, is composed of 900 volumes, and is divided into three parts. The first comprises a complete series of the editions which have been published of the poetical works of Petrarch, from the year 1470 to our days. The second consists of all the Latin, French, Spanish, German, and English translations which have been made of those poems; all the commentaries which have been written on them, and all the notices which have been published regarding the life of Petrarch. The third is composed of a collection of ancient and precious manuscripts on vellum or paper, with miniatures, having reference to the poetry of Petrarch. This library is to be deposited in one of the cabinets of the private library of the king, and of the Council of State at the Louvre.—*Bull. Univ.*

MS. Description of Argolis by M. Barbier de Bocage.—Among the papers left by M. Barbier de Bocage, at his death in 1825, was a manuscript entitled *Argolide*, in which all that part of the Morea is described in minute detail, on the authority of ancient and modern authors, up to 1810. A topographical map accompanies the manuscript. Measures are taken for the publication of this work, and the French government is stated to have expressed a desire to encourage it.—*Ib.*

Memoirs of Madame Dubarri.—The secret and unedited memoirs on the courts of France in the 15th, 16th, 17th, and 18th centuries—the memoirs of the Countess Dubarri—has had great success in Paris, and become quite a fashion. The authoress of the memoirs, says 'Le Globe,' has sought her retrospections even in the pamphlets which the public indignation gave birth to in France during her reign. The work is founded on anonymous writings, on public notoriety, and on the journals and squibs of the day. The book must be therefore considered as a fiction: and has succeeded, *grâce* to the talent of the editor. He has felt that Madame Dubarri was not the principal personage, but he has introduced his readers to her boudoir, to commune with the principal personages of the period: there it was that the fall of Choiseul was prepared; there it was that, in sporting with the black slave of madame la Comtesse, Maupeon caused the banishment of the parliaments, &c. &c. The characters, says the same journal, are sketched with ability, and the conversations of the personages are amusing. The editor has taken much pains to connect her series of anecdotes together; the book is interesting, amusing, and presents a lively picture of the vices of the court of Louis XV. It is diverting to see the jesuits making use of the presentation of Madame Dubarri, and negotiating with her as equal with equal.

French Statutes of Archery.—A little pamphlet has lately appeared in France, containing the statutes and general rules for all companies of the noble sport of the bow, and confraternities of Saint Sebastian, in the kingdom of France. These ancient statutes consist of 70 articles. The Abbé de

Saint Médard les Soissons is the grand master of the order of archery; and in his absence the reverend father the grand prior of the same abbey acts as his deputy, with the title of vicar general. The statutes are obligatory throughout France. They are the charter of the knights of the noble science; nobody could be admitted knight unless he were *catholique apostolique romain*.

Austrian Censorship.—A Vienna correspondent of a German periodical, speaking of the rigid censorship in Austria, laments that it seeks every where for significations and allusions never intended; and even in poetry looks for every thing but poetry. For three years past, says the same letter, has Grillparzer completed two national tragedies, 'The Death of the Emperor Albert,' and the 'Fraternal Strife of Rudolf and Mattyas,' masterpieces of the poet's talents. There is not the slightest hope, however, that the printing, or even the representation, of either of these pieces will be permitted. His last piece was bought up after the third or fourth time of acting, and every copy of it has disappeared, so that the Hungarian gentry of either sex can derive no bad example from it. 'Ottaker' remains on the memory of the censors unforgiven. An account of this tragedy, and of Grillparzer and his style and writings, will be found in No. V. of the 'Foreign Review,' in which he is treated as a very harmless writer, in another sense perhaps than that in which the Austrian censorship might interpret the term.

Hungarian Literature.—A collection of Hungarian poems, translated into German, with a sketch of the history of Hungarian literature, has been lately published at Vienna. According to this work, the earliest production in poetry of the Hungarians is to be dated much about the time of King Johan. It is a poem on King Ladislaus, 1195, and appears to be a church song or hymn in celebration of a festival in honour of that king. The second is thought to be one of those heroic songs, which were sung by the old Hungarians at their repasts. Opinions have been long divided on the antiquity of this monument. But since three new concluding strophes have been discovered, it is concluded to have been composed about the period of the unfortunate battle near Varna, in 1444; the more, as in those times these sort of table songs were much in use. The third and fourth poems, both from manuscripts, are ascribed to 1503 and to between 1450 and 1526. Tinodi Sebestyen Deák (Sebastianus Literatus de Tinod) was one of the most prolific writers of the 16th century, and flourished between 1540 and 1554. He probably, as a writer, came after the celebrated hero, Valentine Török, governor of Ofen, under the government of King Johan. When, after the king's death, the capital was taken by Soliman, and Török was sent prisoner to the Seven Towers, Tinodi left Török's castle, Sziget, and often changed his abode from town to town, gaining his livelihood by the exercise of his poetical talents, celebrating several battles in verses which he sung to melodies composed for them. A collection of his writings was made by himself, and published at Klausenburg in two small quarto volumes in 1554. The first Hungarian poet of renown, Count Balassa, was born in his father's castle, Kekko, in 1550, and was brought up to a military life. He still enjoys a reputation, considerable for the time in which he lived.

Publication of Rüppell's Travels.—Mr. Edward Rüppell, of Frankfort-on-Mayne, is about to publish a narrative of his travels in Arabia Petræa, Dongola, and Kordofan. The work will be accompanied with maps and plates, and brought out at the expense of Frederick Wilmans.—*Leipziger Literatur Zeitung.*

New School of Oriental Languages in Odessa.—The Emperor of Russia has approved a project for the formation of a scholastic establishment for

teaching the oriental languages in Odessa, and has assigned a sum of 10,000 rubles from the imperial treasury towards the undertaking. The governor-general is, besides, authorized to levy from the income of the city of Odessa and of Bessarabia a sum of 4000 rubles, to be applied in support of the establishment. The school will soon be opened, says the 'Leipsiger Literary Gazette,' and it is to be hoped that in a short time the want of interpreters for the oriental languages will be less than it is at present.

State of Religion and Education in Sweden.—A new edition of the Scriptures is preparing in Sweden, under the direction of a commission. Bible societies continue to distribute the Bible; the Catechism has been translated into the languages of Finland and Lapland. The division and classification of the curacies, the separation of the glebes, and the construction of new churches proceed. Measures have been taken for the diffusion of education in Lapland and other provinces. The king, convinced of the great advantages of mutual instruction, encourages it in every way. A decree has been issued containing a digested project for the establishment of primary schools throughout the country parishes. School-rooms have been erected, an aid having been granted towards the expense by the king from his private purse, and 2000 rix dollars (460*l.*) have been contributed by a society at Stockholm for the propagation of mutual instruction. New colleges (gymnases) have been founded at Stockholm, in the island of Gottland, and at Soolvitzberg, in the diocese of Lund. The academy of the last-mentioned place had been made the object of especial financial provisions in its favour; but the sum of 5000 rix dollars (1150*l.*), granted to the university there, and to that of Upsal, for the medical and theological foundations, had been reduced to 2000 rix dollars, in compliance with the desire of the states-general. Aids had been granted for the promotion of scientific travels in foreign countries. Preparatory arrangements have been made for the discussion of a plan for a general change or modification in the system of public education.—*State Paper presented to the Diet on the part of the King.—Bull. Univ.*

University of Göttingen.—In the late winter half-year 1386 students frequented the university of Göttingen; this was 15 more than in the summer half-year. Of this number, of whom 759 were natives of the country and 627 foreigners, 377 studied theology, 573 law, 283 medicine, and 153 other sciences and arts.—*Leipsiger Lit. Zeit.*

University of Breslau.—In the university of Breslau there are at present 1112 matriculated students, besides 106 youths studying medicine and surgery. Thus the whole number is 1208. In the former year, at the same period, the number did not exceed 1094; an increase, therefore, has taken place of 124 students.

Death of the Chevalier von Arnot.—A Russian author of considerable note, Christian Gottlieb von Arnot, died at Heidelberg in January last, at the age of 85 years. The deceased at one time stood high in favour with the empress Catherine, of whose cabinet he was a member, and whom he assisted greatly in her literary pursuits. He was also held in much esteem by the emperor Alexander, and acquired for himself considerable fame by writings which bespeak a highly-cultivated mind, and display great acuteness and extensive information. His last work but one, on the origin and various affinities of European languages, has extended his fame even to America. His memoir on the Russian language is ranked by Russians, even on the score of diction, as a classical work.—*Leipziger Literatur Zeitung.*

§ 13.—Military and Naval Economy.

Swedish Army.—Funds have been assigned by the Swedish government

for extending in the Swedish army the custom of gymnastic exercises. The artillery has been increased by the funds formerly appropriated to the regiment of the king, which has been dissolved.

At Stockholm, kitchens have been established for the troops, a regulation which has been attended with advantageous consequences to the health, comfort, order, and discipline of the soldiery. The manufacture of arms of *Carl Gustaf* has been increased, and the construction of the fortresses of Vaxholm and Carlkrona proceed.—*Exposé of the King to the Diet.—Busch*

Swedish Artillery.—In Sweden there is no foot artillery for field-service, but only two batteries of horse artillery; the rest is formed, half of horse artillery, half of flying artillery. For the service of a six-pounder there are six cannoneers seated on the chest, and three others mounted on horseback. The subaltern commanding the piece stands near the left of the first horses of the train; on the right of which there is another cannoneer, who has the charge of the horse of the subaltern, and whose horse is at the same time a reserve horse. Thus the piece, when in motion, has the width of 4 horses abreast. The cannoneers are furnished with sabres, which, to prevent their incommoding the men in the service of the piece, are fixed to the horses and to the front of the chest, so as to be readily seized in case of need. Each battery of six pieces, including officers and trumpeters, presents a front of 28 or 30 persons, and resembles a small squadron of cavalry, capable, by its arrangement and slight depth, of executing every manœuvre with the greatest rapidity; it can stop suddenly to give the horses time to breathe.—*Milit. Mittheilungen.*

§ 12.—Geography, Statistics, and Political Economy.

Gold Medal of the French Geographical Society presented to Captain Franklin.—The Geographical Society of Paris have presented their annual gold medal, of the value of one thousand francs, to Captain Franklin, as a testimony of their sense of the importance of his second expedition to the shores of the Polar Sea. The letter announcing this honour is expressed in terms calculated to be highly gratifying to Captain Franklin, as may be gathered from the following extract:—'Les dernières années ont été fécondes en découvertes d'une haute importance; mais parmi toutes les conquêtes faites à la science par les voyageurs de toutes les nations, et achevées pendant le cours de l'année 1827, la Société a distingué sur tout votre seconde expédition vers la Mer Polaire. Ce voyage est connu de toute l'Europe; son mérite et ses résultats sont justement appréciés et honorés de l'approbation générale, depuis la publication savante qui les a fait connaître.' The letter also makes known to Captain Franklin that he is inscribed on the list of foreign correspondents of the Society. Among the individuals signing the letter, as officers of the society, are the Baron Cuvier, president; MM. Jomard, president of the central committee; and Simeon vice-president.

Number of Jews in different Countries.—The number of Jews scattered throughout the world, amounted, in 1825 to about 3,965,800 individuals, exclusive of 15,000 Samaritans, and 500 Ishmaelites, making a total of 3,181,300. The following is a calculation of their dispersion and of their numbers in the various states:—

Europe:—In Russia and Poland 358,809; Austria 453,524; European Turkey 321,000: States of the German Confederation 138,000; Prussia 134,000; Netherlands 80,000; France 60,000; Italy 36,000; Great Britain 12,000; Cracow 7300; Ionian Isles 7000; Denmark 6000; Switzerland 1970; Sweden 450. Total number of Jews in Europe, 1,918,053, or a proportion of 1101 out of the population calculated at 122 millions.

Asia.—Asiatic Turkey 300,000; Arabias 200,000; Hindostan 180,000; China 60,000; Turkistan 40,000; Province of Irak 35,000; Russia in Asia 3000. Total 738,000.

Africa.—Morocco and Fez 300,000; Tunis 130,000; Algiers 30,000; Gabes or Habesch 20,000; Tripoli 12,000; Egypt 12,000. Total 504,000.

America.—North America 5000; Netherlandish Colonies 500; Demerara and Essequibo 200. Total 5700. New Holland 50.—*Weimar, Geog. Ephemeris.*

Commerce between Great Britain and France.—In a small work entitled 'Questions Commerciales,' M. Rodet gives the following statement of the interchange of commodities between this country and France. Importations from Great Britain to France in 1823, 22,352,085 francs; in 1824, 28,499,988. Exportation from France to England in 1823, 43,457,075 francs. In 1824, 53,900,573 francs.

French Cotton Trade in 1828.—The supply of cotton in France on the 1st January, 1829, was about 85,000 bales; of which 27,000 bales at Havre, 23,800 at Marseilles, 5200 in the other ports. Of this quantity 27,551 bales was cotton of the United States of America; 3045 Brazilian; 18,500 Egyptian; 6904 from other countries. On the 1st January, 1828, the supply amounted to 84,700 bales of the various growths; on the 1st January, 1827, 75,000 bales; and on the 1st January, 1826, 35,000. The actual consumption in France, in 1826, was 4000 bales, or 72,000,000 of pounds, besides about 2000 bales of manufactured articles exported. In 1827, the actual consumption was 21,000 bales. In 1828, the cotton consumed is estimated at 230,000 bales, or 60,900,000 pounds. The exportations of manufactured articles, between 2000 and 3000 bales. The re-transport in transit of the raw material from France diminished greatly in 1828.

Compared Produce of the Indirect Taxes in France in 1825 *and* 1828.—The following is a result of a table of the comparative produce of the indirect taxes, during the first nine months of the years 1825 and 1828, made use of in forming the budget of last year.

	1825. *francs*	1828. *francs*
Register duty, stamps, &c.	128,759,000	136,540,000
Customs, navigation, &c.	70,828,000	83,377,000
Salt made on the coast	36,973,000	36,808,000
Salt made in the interior	4,790,000	4,447,000
Wine and other beverages	74,601,000	76,182,000
Public carriages and navigation	19,669,000	19,671,000
Produce of sale of tobacco	49,758,000	50,284,000
Produce of sale of powder	2,877,000	2,849,000
Produce of tax on letters and per centage on remittance of money	19,192,000	21,178,000
Passage money, mails and packets	1,253,000	1,614,000
Lottery	12,697,000	10,641,000
Total augmentation	22,194,000 francs.	

Trade in Coffee at Antwerp.—In 1828, Antwerp received 362,573 bales, and 5008 rundlets and hogsheads of coffee; the sales amounted to 341,120 bales, and 3330 hogsheads and rundlets. The supply at the beginning of the present year was 145,000 bales, and 300 hogsheads; on the 31st of December, 1827, the town possessed 140,000 bales, and 500 hogsheads.—*Journal du Commerce.*

Navigation and Commerce of the Netherlands.—The following statement shows the progressive increase of the navigation and commerce of the Netherlands during the last five years:

Vessels entered in	1824.	1825.	1826.	1827.	1828
The port of Antwerp	681	800	928	822	955
Amsterdam	1729	1606	1887	1998	2132
The Neuse and Goree	1373	1395	1587	1731	2085
Ostend	400	486	482	501	574

The bales of Coffee imported in the last four years were as follows:—

	1825.	1826.	1827.	1828.
In Antwerp	270,000	241,000	379,000	367,000
Amsterdam	102,000	150,000	113,000	169,000
Rotterdam	——	134,000	98,000	113,000

Galignani's Messenger.

Population of Sweden.—According to official documents, the population of Sweden increased 119,624 in the interval between 1815 and 1820, or 23,925 a year. At the end of 1820, the total amounted to 2,548,690. From 1820 to 1825, the total increase was 186,562, or about 37,312 a year. It amounted at the end of 1825 to a total of 2,771,252 souls. The increase of 43,850 souls in 1825, was, until then, without example. For the end of 1828, the population is to be estimated at 2,860,000; so that the population promises, in a short time, to equal the amount at which it was reckoned before the cession of Finland.—*Exposé* and *Bull Univ.*

Improved Administration of Affairs in Sweden.—The 'Bulletin Universel' of February, in an abstract of an *exposé*, submitted by the king of Sweden to the Diet, publishes some interesting particulars of the important improvements and modifications which are in a course of adoption in the government of that country. Commercial treaties on the system of reciprocity have been concluded with Great Britain, Denmark, Prussia, the Porte, the United States of America, the Netherlands, and the State of the Church. Religion and education are encouraged. A civil and criminal code are in preparation; and arrangements are making for an improved organization of the hospitals. New houses of correction have been constructed; the formation of a corps of pioneers, to consist of 300 convicts, has been ordered by the king, with a view to their reclamation, through the effect of a suitable employment, military discipline, and a system of correction. Agriculture is promoted by the division of lands, by facilities afforded to alienation and colonization. Licenses have been granted for new furnaces for the manufacturing of iron, to the amount of 12,800 skeppunds of bar iron, and 4000 of raw iron, (400 lbs. the skeppund,) the former produce did not exceed 3000 skeppunds.

Budget of Sweden.—From the years 1816 to 1823 inclusive, there was a surplus revenue of 501,039 rix dollars (115,238*l.*) towards paying off the debt; from 1823 to 1827 inclusive, the revenue is estimated at 4,000,000 rix dollars, (920,000*l.*) and the net surplus to more than 2,000,000. The statement of the produce of the customs after the reduction of the duties shows the following progressive increase; 1823, 110,679 rix dollars; 1824, 147,784 rix dollars; 1825, 211,906 rix dollars; 1826, 420,130 rix dollars; 1827, about 939,000.

Savings' Banks in Sweden.—The savings' banks in Sweden have gone on increasing since their first establishment. They now amount to seventeen, with a total capital of nearly 600,000 rix dollars, (138,000*l.*).

MONTHLY METEOROLOGICAL JOURNAL,

From April 21, 1829, to May 20, 1829.

51° 32′ 30″ N. 8′ 30″ W.

April and May	Lunations.	Thermometer. Mean Alt	Barometer. 9 hour	Winds. A.M.	Winds. P.M.	Atmospheric Variations. 9 h. A.M	Atmospheric Variations. 0 hour.	Atmospheric Variations. 8 h. P.M.	Atmospheric Variations. During Night	Prevailing Modification of Cloud.
21		47.5	29 46	E.	E.	Fair, Cl.	Clear	Fair, Cl.	Rain	Cirrostratus.
22		41 75	.17	—	—	Rain	Rain	—	—	Cumulus Nim
23		50	.39	—	—	—	Fair, Cl.	—	—	—
24		45 5	.42	—	—	—	—	Rain	—	Cirrostr. Cum.
25	h. 9 36PM ☾	40.5	stat.	N.E.H.	N E.	—	Sleet	Fair, Cl	Fair	— —
26		41.5	.86	CE.	CE.	Clear	Fair, Cl	—	—	—
27		43.75	.50	S.W.	S.W.	Rain	—	—	—	— —
28		42 5	.24	S.W.	N.W.H	Fair, Cl	—	—	—	— —
29		41	.37	N.	N.	—	—	Clear	—	—
30		44	.60	N.W.	W.	—	—	Fair. Cl	—	—
1		51	.44	W	—	—	—	—	—	Cumulus
2	7.57AM	55	stat	—	S.W.	—	Clear	—	—	— Cirrostr.
3	●	54	stat	S W.	—	—	Fair, Cl.	—	—	Cirrostratus
4		53 5	55	N W.	—	Clear	Clear	Clear	Clear	Cumulus.
5		57 5	.77	S.W.	—	—	Fair, Cl	Fair, Cl	—	Cirrostr.
6		55.75	.76	—	—	Rain	—	—	—	—
7		53 5	stat.	—	N.W.	Fair, Cl.	Shrs.	Shrs.	—	— Cum
8		58	.93	W	S W.	Clear	Fair, Cl	Fair, Cl	—	— —
9	h. 7 36PM ☽	58 5	stat	—	W.	Fair, Cl	Fair, Cl	Clear	—	— —
10		54	stat.	N.	E.	Serene	Serene	Serene	—	— —
11		52 5	.90	E.	—	—	—	—	—	—
12		57 5	.84	—	—	—	—	—	—	Cirrostr.
13		56	.81	—	—	—	—	—	—	—
14		62	stat.	W.	W.	—	—	Fair, Cl	—	Cumulus.
15		62	.80	S W.	E.	—	—	—	—	Cum. Cirrostr.
16		56	65	N.E.	N.E	Fair, Cl	Fair, Cl	—	—	—
17		57 5	.89	—	—	—	Serene	Serene	—	—
18	h. 7 48PM ○	58 5	stat	—	—	—	—	—	—	Cloudless.
19		58.5	.77	—	—	—	—	—	—	—
20			stat.	—	—	—	—	—	—	Cirro cumulus

Mean Temperature 50°. Mean Atmospheric pressure, 29

Tempestuous N.W. weather.